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PROCEEDINGS

OF THE

FOURTH INDUSTRIAL SAFETY CONGRESS

OF

NEW YORK STATE

UNIVERSITY OF ILLINOIS LIBRARY

MAY 28 1920

HELD UNDER THE AUSPICES OF THE
STATE INDUSTRIAL COMMISSION

EDWARD F. BOYLE, Chairman

JAMES M. LYNCH

FRANCES PERKINS

HENRY D. SAYER

CYRUS W. PHILLIPS

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Syracuse, N. Y. December 1-4, 1919

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MONDAY AFTERNOON, DECEMBER 1

OPENING DAY

PRESIDING OFFICER: JAMES M. LYNCH, NEW YORK STATE INDUSTRIAL COMMISSION, PRESIDENT OF THE CONGRESS

COMMISSIONER LYNCH: It is not possible for his Honor, the Mayor, to be here today to make the welcome address, so he has delegated his Commissioner of Public Safety to perform that pleasant task for him. All of us who know the Commissioner, know that the Mayor has selected a very worthy representative.

I have the pleasure, therefore, of introducing to you the Honorable Walter W. Nicholson, Commissioner of Public Safety.

ADDRESS OF WELCOME

BY HONORABLE WALTER W. NICHOLSON, COMMISSIONER OF PUBLIC SAFETY,
SYRACUSE

Ladies and Gentlemen: On behalf of Syracuse, in the absence of the Mayor who at the last moment was prevented from coming here in person, it becomes my happy privilege to say a word of welcome to the safety congress just assembling again in this city. I do this with more than passing interest because, as you know, the Department of Public Safety in any large city is interested in the same fundamental principles of safety as guide you in your work and study of industrial safety.

Moreover, the Mayor bids me literally, to present to you the freedom of the city and to turn over the keys. And while I can not hope to do that with the same grace and dignity that he possesses, yet in a way I think I can do it with some force when it is remembered that one of the branches of the public safety work in this city represents the strong arm of the law. I want to say to you in confidence that if any visitor or delegate, through over enthusiasm or perhaps a little too much relaxation from ordinary conduct, finds himself in some trouble, the latch string to the department of public safety's office in the City Hall hangs out and if he will come over there and pull the string perhaps we may be able to do something to help him.

I suppose I should add, that is for outside consumption only. For, any person here that belongs to Syracuse will be held to the same line of accountability to all that he says and does as he usually is.

Syracuse takes just pride in feeling that it is well located and well equipped for convention purposes. We are glad to have people come here and visit us, and we hope that they will enjoy themselves so much that when they go away they will go with the feeling that they, in some degree have had some benefit through the visit.

We have a great many industries in this city, a great diversity of industries and in greater, or less degree, I think you will find in all of these places the principles of safety that you teach are practiced.

We have many other things that go to make up a big city. We have schools, churches, parks, play grounds, theaters, and right across the street here we

have a finely equipped library which leads me to the thought that if, in your discussions, you should happen to reach a point where some authority is needed, you may just step across the street where I am very sure you will find the answer in the books which are there at your disposal.

If I may presume to say just a word at this time while you are here in this city, I would like to direct your attention to one of the things that we have in Syracuse, as they have in all progressive cities in these days, one of the problems, and that is the great problem of proper and safe regulation of street traffic. We feel that the greatest thing to be accomplished towards a final solution of that problem is a high type of public cooperation, and we think the only way to get that is through the right kind of educational publicity. We have a committee here now, of which one of your men, Mr. Fiesinger, is the head, and we are planning to have a Safety Week early next spring. I would like to say to any of the people who come to this Congress who may be interested in public safety matters, that if during the few days you are here you can informally help us in some way toward pulling off a real safety campaign next spring, we will certainly be very grateful for your assistance.

And now I shall leave you to the good things that I know are in store for you, but will repeat what I said a moment ago that we welcome you with a whole heart; we want you to enjoy yourselves while you are here, and we expect that when you go away you will go away with a real feeling that you were glad you came and will want to, and will come again.

INTRODUCTORY REMARKS

BY JAMES M. LYNCH, MEMBER, NEW YORK STATE INDUSTRIAL COMMISSION

COMMISSIONER LYNCH: Syracuse is, of course, a very hospitable city, but if any of you find any of that material that the Commissioner of Public Safety thinks might exhilarate you, we will take it away from you.

This is the fourth New York State safety congress. In four successive years we have met to exchange information and ideas and develop our common interest in the promotion of industrial safety. I believe I am correct in saying that usually the point of view in these annual meetings is the forward-looking one with constant emphasis on what can be done and what ought to be done, and that is well, because inspiration to progress is what above all else this annual congress should afford. But for once I propose to find such inspiration in a look backward at something accomplished because this particular piece of history goes back to our first congress in 1916 and recalls one of the discussions at that meeting, a discussion which indicated quite specifically an important development of safety work in this state then greatly needed. My bit of history today is in the nature of a report of progress accomplished since then.

Those of you who attended that first congress may recall a discussion which then occurred as to accidents in the building industry, in the course of which the general fact was brought out that while its hazards were serious, but little progress had been made toward protection of workmen against those hazards, surprisingly little indeed when compared with what had been done in other fields of industry. That much you may find in the proceedings of the first congress. But what followed on the evening of the day of that discussion is not recorded but is here reported to make the story complete. This was an informal

meeting of several persons who had participated in the discussion to consider the subject further, the group including representatives of the Industrial Commission, of one of the leading building trades unions, and of a firm of employers specially interested in safety in the building industry. This little conference continued the discussion of the afternoon in the direction of the very practical question of what was the next step to take, and resulted in making it clear that there were two next steps to take, one to bring together and make public the facts showing the need of a remedy, the other to secure formulation and establishment of a safety code for building work.

Perhaps I might call that chapter one of my story, the scene of that chapter being, as you see, the first safety congress. Chapters two and three are located in the Industrial Commission. Chapter two will record the accomplishment of the first of the next steps above referred to, in the publication in March, 1917, by the Industrial Commission, through its Bureau of Statistics and Information, of Special Bulletin No. 80 on Fatal Accidents Due to Falls in Building Work, Their Frequency, Causes and Prevention. That bulletin marshalled statistics and facts demonstrating three things: (1) that while there were approximately only one-fourth as many people employed in building as in factory work, more building trade workers than factory employees were being killed by accidents; (2) that such regulations of law for prevention of accidents in building work as existed were being generally ignored; and (3) that those regulations were inadequate to meet the hazards of such work and should be revised and supplemented by more detailed requirements. The interest aroused by this bulletin, as shown by the demand for it, indicates that its purpose was well accomplished. That closes chapter two of this narrative.

Chapter three has to note the taking up by the Industrial Commission, through its Industrial Code Bureau, of the formulation of a code of safety regulations for building work. Aid of both employers and employees on code committees was secured for this work, and generously given. A code has been worked out covering the subject of ladders, scaffolds, runways, stairwells and stairs, floor openings, ramps, artificial lighting, sanitation, hoisting apparatus, and oxy-acetylene welding and cutting, and covering all of these in great detail. Opinions have been expressed by those familiar with conditions in the building industry that this code is one of the best, if not the best, of its kind in the country. This code is now in the final stages of the necessary procedure for adoption so that it is expected that the new year just ahead will see established with the full force of law behind it a comprehensive set of regulations to make building work safe in the State of New York. That brings me to the close of chapter three of this story.

It is certainly gratifying to be able to relate such a story as the foregoing which records the achievement of a very important extension and standardization of safety regulations, and it would not be inappropriate to close the story in three chapters. But I said above that the dominant attitude in these congresses has always been the forward looking one, and I want to look forward a moment with regard to this building code and call attention to a fourth chapter concerning it which must also be written if the full fruits of the progress already made are to be gathered.

In all state safety regulations there are three necessary stages, investigation, legislation and administration. The foregoing account records the com-

pletion of the stages of investigation and legislation in connection with the new safety code for building work, but we have still the stage of administration to provide for. It is hardly necessary to call attention to the fact that any law or regulative code will fall far short of accomplishing its purpose unless there be adequate provision for thorough and systematic enforcement. It is very important to note, therefore, that the new building code is in a very different situation with respect to the question of enforcement from any other code which has been established by the Industrial Commission. All of the others have applied to branches of industry (factories, mercantile establishments, mines, quarries or tunnels), for which there were previously provided inspection forces to administer them. But, as indicated in Special Bulletin No. 80, in the building industry a field for safety work is entered for which there is no adequate existing provision for enforcement, so that in this case it is necessary, in order to carry to fulfillment this very important extension of state safety work, to provide for the indispensable work of enforcement in addition to setting up the necessary safety regulations.

The Industrial Commission has already taken the initial step for this by including in its budget a recommendation for a force of inspectors for building work. The next step is to secure from the Legislature the necessary appropriation. That will no doubt come if the necessity and importance of the matter is made sufficiently evident to the Legislature. Because the matter seems to me so important in itself, as one which concerns the lives and safety of workers exposed to accident far more than those in many other fields of industry for which such provision has long been made, and because it is a matter of carrying to complete success a movement which, as I have above indicated, received its first impetus in the first of these safety congresses, I feel it is quite appropriate to thus lay the matter before this congress and to bespeak your support in whatever ways it may be possible for you to give it, for the securing this winter of the necessary inspection force to complete this new safety movement. With that secured, we may then expect in a future congress, and let us hope in a not distant one, to be able to write chapter four of this story I have been telling, and be able to write as "finis" to that chapter the fact that life has been made safer for the worker in another great field of industry.

You undoubtedly, all of you, have read in the daily press of the accident which occurred in connection with the erection of a building in the metropolitan section of the State where three wage earners were killed and a number of others injured. That, of course, illustrates graphically the force of the point I am trying to make today, namely, the frequency and the fatal character of the accidents that occur in the building industry.

I notice in Albany, in the clippings that come to my desk from the various papers throughout the State, that a large number of them relate to accidents in the building industry; a painter falls from his scaffold and is killed, leaving a widow and five children; a carpenter has fallen from a building and broken his arm; a bricklayer has met with some accident, fatal, or one that maims him for life, and, always the burden of these accidents falls upon the dependents of the injured wage earner. It is true that the State has provided for the payment of compensation in these cases, but that compensation compared to the cost of living and the wages that are being paid today, is only a

very small and inadequate substitute to provide a livelihood for a widow and children, or for a maimed workman and his family.

And I have noticed also, that it seems that the wage earner in the building industry with a family is the one who is maimed or is killed. Or, if you put it the other way, that the wage earner in the building industry who is killed usually has a large number of dependents.

So much for that story. But while I am telling stories, I want to suggest the subject for another one of the same sort. This is the question of extending the safety movement to another field of industry not now covered by any state safety regulations but in which there is a known serious hazard to employees. I mean the transportation industry outside of railroad operation and water navigation, that is the handling of freight and merchandise in connection with docks, warehouses and storage, and in street cartage. Here is a group of allied occupations which according to the latest figures available employ in this State only about one-tenth as many people as does manufacturing but in which during the third year under the Compensation Law there were more than one-third as many compensated accidents and more than one-half as many employees killed as in all of the factories.

And there is another peculiar thing. As we get into the matter of accidents as furnished to us from the figures of the compensation records of the Commission, we find that the factories of the State are not such very bad offenders after all. And we find also, that the greatest ratio of accidents, serious accidents, accidents resulting in death, occurs in those industries over which the State Industrial Commission has no regulatory power. That is, vocations and industries that don't come under the jurisdiction of the State Industrial Commission or of the Labor Law.

Is it not high time that we begin chapter one of a story for this field like the story for the building industry above recounted? The question will doubtless be raised as to whether state safety regulations can be applied in this field in which many of the hazards are of course of a different type from those in factories. But if we have the right attitude about safety work we shall not let newness of problems deter us from entering any field where there is a known serious hazard, at least to the extent of investigating that field to see just what is the nature of its hazards, which is always the first step in accident prevention work anywhere. Certainly not until we have gone at least that far can anyone be justified in arguing whether we should or should not proceed with further chapters in a story for this new field of high hazard to human life such as we have long had written for manufacturing, mining, quarrying, tunnel construction and compressed air work, and are now bringing toward completion for building work.

I have one other matter to which I want to call attention at this time as one in which all those interested in the industrial safety movement in New York State should interest themselves, because it is one of the important aids to progress in all lines of prevention work. This is adequate and at all times up-to-date statistical information about the distribution of accidents by industries and causes. I hope it is not necessary in this day and generation to spend time proving that such information is of very great practical value at almost every point in safety work. What I have said above is itself an illustration of the way in which we find by statistics where the serious hazards

are and hence where we most need to apply our efforts for prevention. The industrial code for building work was inspired by a statistical demonstration of the high hazards in that industry, and my appeal for your interest in the hazards of freight handling and street transportation finds its justification and main force in a similar demonstration of the hazards in that field. And if we proceed along the latter line, as suggested, the first thing we shall require will be the figures showing what are the causes, and which are the most frequent and serious causes, of accidents in that field. So all through, not only for the great division of industry and the main groups of causes, but for each branch of industry and for each cause, we want the figures to show what the hazards are and how serious each one is, so that we shall apply our prevention work where it will accomplish the most good. Furthermore, we must have this information not only for the initiation of preventive measures, but we must have it to measure our progress in safety work, and check the effectiveness of our efforts. For example, after the new building code goes into effect and is followed up by proper inspection, we want the statistical records to prove whether we are reducing the hazards in that industry as a whole, or not, and to check up the different features of the code by results in practice to find out how well each provision is actually hitting the particular cause at which it is aimed so that revision or addition to the code in the future shall be intelligent and not haphazard.

Now it is precisely that kind of statistical service in aid of accident prevention that has long been planned by the Bureau of Statistics and Information of the Industrial Commission, and toward which that bureau is working, and which, I am glad to be able to report, is really nearer realization today than ever before. But full realization, and that is the only realization for such a service which should be regarded as tolerable in this Empire State, which has the greatest opportunity in this kind of work of any State in this country, has been prevented up to now partly by technical difficulties connected with administration of the Compensation Law and partly by insufficient resources. Fortunately the former difficulty bids fair to be removed as the result of amendments of the Compensation Law last winter, so that removal of the latter is the very practical point of interest now. The matter is really in a stage where what is needed is for the immediate present temporarily assured but it remains to make the thing certain for the future. To be specific, for the current fiscal year an emergency appropriation to increase the funds for such work was made last winter by chapter 629 of the Laws of 1919, and what is now necessary is to see that this increase is continued in the regular budget of the Bureau of Statistics for next year which the Industrial Commission has already recommended. Reduced to a plain dollars and cents proposition, what we want is provision of something less than \$30,000 a year, all told, for statistical service relating to accidents and compensation. Does that seem large to anyone? If so, just note that we are talking about an annual expenditures of \$30,000 in order to procure essential means for the reduction of a bill of losses mounting into many millions of dollars annually, how many millions it is not easy to say, but we know it is so many that the \$30,000 we are talking about would be but a very small fraction of 1 per cent of it. Therefore, both because of the importance of such service to the safety movement and because the resources required for

it are wholly reasonable in amount, I bespeak your interest in this very practical matter to the end that the Bureau of Statistics may from now on be in a position to render the kind of aid to the safety movement in this State which it should, and which I know that all of you who have knowledge of the work it is doing will agree it can do, if it is but given a fair chance to do it.

Now to-day, in the address of the representative of the Mayor, you had your attention called to a movement under way in this great central city of the State looking to a safety first campaign that is to be inaugurated here, I think the Commissioner said, in the spring. But that safety movement has already been inaugurated, and safety has been foremost in the minds of the people because of the great number of fatal automobile accidents occurring in the streets of the city.

That is only one phase of this safety movement; only one thing that these safety congresses can, in a general way, promote. And, it is my impression based on the experience I have had in the years that have intervened since the first industrial safety congress was held in this hall, that the impetus these safety congresses have given to the great safety movement has been almost incalculable. If we could hear, or have accurate knowledge, of the number of fatal accidents that have been prevented because of these safety congresses we would all of us agree that we are engaged in a work which is only a feature, an incident of the work of the State Industrial Commission that is well worth while, and that we can all feel proud to be participants in and we trust will continue with renewed force each year until, and even after, accidents have been reduced to their minimum percentage.

We are glad to have you with us at this fourth industrial safety congress, and we believe that the program committee has prepared for your consideration a series of papers on vital subjects that will be of absorbing interest during every moment that this congress is in session. And, as a member of the State Industrial Commission and occupying temporarily the position of president of this congress, I urge upon you all to be present at all the sessions. I am sure you will be well repaid for your effort and your time.

Several of the speakers who are on this afternoon's program are due on the Empire State Express. One of them, however, is with us, Mr. Richard C. Stofer, President of the Associated Manufacturers and Merchants of New York State, a gentleman whom it is a delight to know and be associated with, a man of broad vision and breadth of view and whom I know personally to be whole-heartedly interested in the prevention of accidents, in making industry, whether in the mine, the mill, or the workshop, whether around the street or building, just as safe as industry can possibly be made. It is my privilege, therefore, to at this time present to you Mr. Richard Stofer who will now address you.

SAFETY FROM THE VIEWPOINT OF ORGANIZED EMPLOYERS

By RICHARD C. STOFER, PRESIDENT, ASSOCIATED MANUFACTURERS AND MERCHANTS OF NEW YORK STATE

Mr. Chairman, Ladies and Gentlemen: This occasion reminds me of a story which was told of a party of young men who were in attendance at a banquet.

One of the individuals was an exceedingly nervous person and the boys intimated that he would be called upon for an after-dinner speech. Well, the poor fellow didn't eat anything at all, he just worried himself into a cold sweat and he was drenched to the skin. Just at the last moment one of his friends, fearing that he might faint away, encouraged him by telling him that he would not be called upon. Naturally he then felt very regretful in that he had missed a good feed.

My condition this afternoon is somewhat different. I expected to follow my good friend Mr. Holland, who I see has just arrived. Whether or not, he has put up a job on me, I can't tell. However, my suspense, my agony has been of somewhat shorter duration than would otherwise occur, I can assure you.

In looking over the program I read that Mr. Holland will address the congress upon the subject of "Safety from the Viewpoint of Organized Employees," and that I will address the congress upon the subject of "Safety from the Viewpoint of Organized Employers." I couldn't help but think that both organizations are quite unanimous in their viewpoints as to the necessity of safety practices, and that after all, the viewpoint of either organization is not at all important, because it all depends upon the viewpoint of the individuals who should contribute toward safety first.

The representative of the Mayor, in discussing with me the movement which was on foot, said very plainly that the authorities had no hope of succeeding in this movement unless the citizens of Syracuse would contribute to the movement and co-operate. He brought out the idea that each individual citizen, when he is on the street, thinks much of his own personal liberty and therefore does not hesitate to take advantage of a crossing with his automobile, or whatever it may be, feeling fully assured that he himself has the right of way. Therefore, the keynote of the safety-first movement depends upon the individual viewpoint and not the viewpoint of the various organizations. Our organization, your organizations, of course, are in favor of safety first, but how can we bring it home to each individual that he is the essential unit in this important movement?

I am duly appreciative that my invitation to this fourth safety congress results from the fact that I happen to be the President of the Associated Manufacturers and Merchants of the State of New York. Therefore, in their behalf, I extend to you our hearty greetings and express in behalf of the association, our deepest appreciation of your thoughtfulness and the honor thus bestowed upon us.

At the same time, I would be remiss should I neglect to congratulate you upon the success of our safety congress movement to date, and the constructive accomplishments resulting from your intensive study of this important humanitarian subject.

Our membership earnestly desires and believes that the relations between capital and labor; or, rather, between the managers of the stockholders' money and the workers — but who rather should, and I believe will eventually, be more properly termed the producers — must be worked out in all industries by the initiative of the parties directly interested, and with perfect freedom of action, under the Constitution and the laws of the United States of America.

No authoritative pressure or compulsion is desirable. All parties must and will have the same purpose in view, viz.: The achievement of co-operation and harmony, coupled with the greatest possible productivity. When we approach our problems with this sincere desire, managers and producers will unquestionably discover fundamental principles and policies which will insure mutual agreement, but neither side can at any time be individually or collectively coerced into agreement or harmonious action. It is clear that there should not and must not be classes of citizens. There should and must be one class — Americans — and fundamental American principles must at all times prevail. Selfish motives, the gratification of personal aggrandizement, the usurpation of power, by one set of citizens or another, cannot prevail. We must be one large community, working together for the best interests and benefit of all, with malice toward none; thus unitedly encouraging individual initiative, constructive and co-operative endeavor, looking to the development of greater productivity.

As I thoughtfully approach the subject of "Safety First," I am caused to wonder if, after all, you have as yet made an exhaustive study of the subject from every angle. As I look over this assemblage, in my endeavor to view it from a psychological standpoint, I know there are some present who think: "Why, he is a manufacturer, an employer, a boss! What does he know about safety practices in a workshop?" And it reminds me of a letter I received from my son in France, in which he stated that he had perfected the art of keeping his feet on the desk, without the employment of spurs.

Thus, perhaps, some think the principal safety practice of the employer or boss is his ability to keep his feet on a mahogany desk, with a cigar in his mouth, and avoid a spill.

It is an old man's privilege to reminisce. Some of you will be old some day, hence take my hand, and let us take a little jaunt down reminiscence lane.

In the first place, I want to tell you a profound secret: I was young once, and I loved a joke; many of them were of the practical variety, and what is more, if to-day I caught anyone perpetrating some of the tricks I played in that prehistoric age, I would order that he be "fired" on the spot.

In those days I was care-free, because I had no personal responsibilities, save that of conserving enough of my weekly wage to pay my board and satisfy my desire for clothing. Conservation in the form of saving was a subject unknown to me.

Having earned my living since the age of fourteen, it is a patent fact that I began by performing more menial work than perhaps has been performed by any individual in this audience. Hence, my experience in the yard, the workshop, on the coal car, in the office, on the road selling goods, has proven a wonderful university of training. As was once said of me, I graduated from the University of Hard Knocks — at least I thought twenty or more years ago that I had graduated, but to-day, I say to you in all candor, I am still pursuing the same course in the same institution of learning.

In my earlier days there were no safety congresses, no "Safety First" signs. Were it not for the fact that I am a natural coward, as it relates to the safety of my own hide, you would doubtless not be afflicted by this bore-some harangue at the present moment, but we are wandering far afield.

The causes of accidents are generally traceable to thoughtlessness, sometimes perhaps to dare-deviltry, frequently to discontent, resulting in lack of

interest, but in the main to mental lapses incidental either to lack of interest, or lack of the development of broad vision, which is a God-given instinct, so often not developed, primarily because of heedlessness and the ultra-development or the absence of personal responsibility. Hence, it has come to pass that an army of safety experts, factory safety inspectors and sanitarians have sprung up in our midst, their purpose being to save us from ourselves. Still, occasionally, an engineer runs past a signal; a signalman fails to throw the proper signal; the automobilist runs over the bank; the pedestrian steps in front of a rapidly moving vehicle; a workman is crushed by a falling object, or injured from other causes; and the occurrences are, in a measure, unexplainable.

Looking back, recalling the maiming and loss of life which occurred among my fellow workmen, I discover that with the exception of a possible single instance, they would to-day all be included among the preventable accidents. In fact, they could not occur, unless the worker wilfully destroyed or set aside the now legal safeguards provided for his protection. The time for details is not at hand. I shall not tire you by an extensive description of many accidents which would fully substantiate my statement, that the cause of accidents, in the main, is due to mental lapses.

But, as a representative of employers, even though I am an employee, it may be said of me, "Yes, you are now in favor of safety appliances, because the prevention of accidents saves you money." My reply is, "Granting this to be true, did the engineer run by the signal and wreck the train because it was easier to do so than to shut the throttle? If he survived, have you not heard of his poignant grief—the deep and lasting horror which he endured?"

The humane employer, and he is in the vast majority, is more deeply grieved over an accident or fatality to an employee, than are the majority of his fellow employees—statements of the disseminators of false information and the calamity howlers, notwithstanding. It is true that an employer may depute the sanitary work of a plant and the safety engineering to experts, but do not be misguided—he never forgets it. From my own personal experience in earlier days, the workers generally have little thought of their personal responsibility to their fellow man, except as it applies to the members of their own immediate family. Foremen, who are practical men in the main, insist that each workman should be able to take care of himself.

It is really appalling, ladies and gentlemen, to what extent a foreman absolves himself from responsibility. He knows full well the danger, he feels that if he tells the man once, the latter, if he has any brains, will take care of himself. I think it will be brought to pass in time that foremen in charge of men will be held personally responsible for their safety, at least to a certain degree.

I have proven to my own satisfaction by the inspection of small shops, the property of the worker, who first embarks in business for himself, that there is no pretension at guarding of machinery or the installation of safety devices.

I had an experience quite recently that confirms this statement. I say quite recently; when a fellow gets old anywhere within ten years is a recent occurrence. We had employed a painter to paint a gable of a factory building which was erected before the Department was as highly organized as it

is to-day and as a result this large five-story building had a gable roof. I didn't care to let any of my own men go up there, because I thought the risk too great. I selected a man of great experience who had three or four men working for him, in the summer time sometimes fifteen men were working for him. We employed him with the strict understanding that he himself would see to it that the scaffolding would be carefully built, and that every safety appliance would be at hand.

I have a peculiar habit of butting into things sometimes, and I couldn't get this painting proposition out of my mind, it wasn't a long job, but I thought it a very dangerous piece of work. I went around to see the work and finally saw that he had everything all right. I even went up on the roof to see whether he had the hooks properly fastened or not. He had slung the sling, as they call it, across the end of the building. The law strictly provided that there should be a guard on the rear of the ladder so if the man stepped back he would have some protection. There was no guard there at all.

I happened to know two of the painters who were on the ladder and I looked up and I couldn't believe my own eyes. One of them was so nervous he could scarcely move, still he was endeavoring to climb. I went upstairs to the upper window and called him by name and I said, "John, how are you getting along up there?" I thought to divert his mind from the possible danger. "Why," he said, "Pretty well." "You haven't any guard on there, have you?" "Oh, no," he said. "Well," I said, "Why don't you have a guard?" "Oh, I don't know, guess I don't need any." "Well, I wish you would come in here a minute, I want you to show me how you have that sling fastened." "Why," he said, "It's perfectly safe." "Well," I said, "If you will come in here I want to know just how you have it anchored." Ladies and gentlemen, if I hadn't been very careful about the withdrawal of that man he would have fallen the entire five and one-half stories; he would have gone right to the ground.

Then I went to this contractor and I said, "What do you mean by not complying with the law?" "Oh," he said, "It isn't necessary." "Were you up on that ladder?" He said he had not been and I said, "Well, if it isn't necessary, why don't you go up there and do that painting?" "Well, I haven't time." "Well, you are in a terrible hurry. I want you to go out there and call that other man off the job and I don't want another inch of paint spread until you have that ladder fixed properly."

This man whom I enticed off the ladder would certainly have fallen to his death. Now, does that not exemplify the degree of irresponsibility of an accident which happened years ago before there were any safety congresses?

I was about fourteen years old, there were three small children besides myself in the family. My father was a carpenter and he was ordered to repair a certain space over a fly wheel of a large engine. The engineer was told that this job would be done during the noon hour and he should not start up until he was assured that the carpenter had come down from the position which was necessary to take in order to make the repairs. The whistle blew, the engineer opened the throttle and the carpenter was crushed to death. I feel at times that in spite of our notices and in spite of the word which we give out, that we don't have impressed as vividly as we should upon the minds of the workmen their personal responsibility.

Now, it is true that employers at times are negligent, but I might cite another instance. I am going to make it brief, because my friend Holland will get back at me if I take up all his time.

In a building operation the engineer had the marks on his cable showing the stories. He had nothing to do but to watch that engine, had no fire to watch, simply his throttle and to obey the bell calls which were signals to raise and lower the elevator. The workmen were instructed that they must not, under any circumstances, get on that elevator; they were to put their load on and the man above would take it off. The building was nearly completed, an elevator load of brick was ascending; the man on the top floor, on the roof mind you, when the elevator arrived at the floor landing stepped on to the elevator to wheel the load of brick off. The engineer for some unaccountable reason didn't stop the engine, the elevator went up five feet, the rope broke, the man, elevator, and brick went to the ground and he was killed. Surely that was a mental lapse on the part of the man; we can't account for the mental lapses but they do occur. When we stop to think of the man who started the engine and killed the carpenter; the man who ran past the signal on the cable and killed the laborer, with a deep sense of responsibility he can only say, "I murdered that man." It is fortunate, indeed, that they don't think quite so deeply at times because we know they are just as deeply regretful as any one else.

On the other hand, there is a mental lapse, we know it, and how can we bring about a condition where an accident is absolutely impossible? I think, ladies and gentlemen, that it is going to require years of education along the lines of that which this safety congress has been conducting, and that it must be of even more intensive character.

The small employer may have two or three men working for him and it is his theory that they should take care of themselves, just as he always took care of himself. But as this worker, as the result of more intensive labor than he ever before performed, acquires more business, he also acquires more and greater responsibility; thus it comes to pass that he takes a greater interest in the welfare of his workers, because of the development of that greater sense of responsibility. He is responsible to the worker; he is responsible to the customer to whom he sells his wares, and who demands full value for the price paid. Then, too, it is well known that a growing business has an avaricious financial appetite; hence, he becomes responsible to his banker, from whom he borrows money, and who, in turn, demands a fair interest for the use of such funds.

Next, he takes in partners, in the form of stockholders, who, for the receipt of an engraved piece of paper, a certificate of stock, gives this worker-employer money to feed and develop that business, and who, in turn, demand a fair return for the use of their money and its ultimate safe return.

Hence, it comes to pass that this worker becomes not only a boss, but a manager, and his responsibility grows. He finds himself between the upper and the nether stone. The stockholder becomes his boss and he becomes the manager of the enterprise. Hence, we have stockholder, manager and employee or producer. Their interests become one and inseparable. The failure of either means a serious loss to all; but, you say, the worker has nothing to lose, because he steps next door to another job and obtains as much if not more pay.

Nevertheless, in that event he is the greatest loser because he lost an opportunity to develop a greater degree of personal responsibility. He lost an opportunity to think and act for himself and others, and with a growing industry, he himself probably becoming either a manager, a stockholder, or both. Hence, his loss is by far the greatest, and because of his failure to overcome selfishness and assume personal responsibility, which develops individual initiative, the fundamental element responsible for the growth and development of this, our beloved nation.

Assume for a moment that George Washington or Abraham Lincoln had sidestepped, and had gone along the line of least resistance rather than assume responsibility for his fellow men. What would have happened to our nation?

There is ample historical proof for the assertion that the greatest leaders of men have risen from the workers, the masses; those who lived under most humble circumstances, but those who realized the necessity of assuming personal responsibility and the development of individual initiative.

But before we leave our worker friend — I say "worker," because he is now working harder than he ever worked in his life; he is enjoying his work, because of his intensified interest and love of accomplishment. He is free to create and build. He does not work by the hour. His labor is not measured by the clock, but rather, by his physical and mental capacity. He discovers an additional responsibility greater than all others, viz.: a responsibility to the ultimate consumer of his wares. Not only is he in the maelstrom of competition, but he must measure the value of his product to the ultimate consumer. If the price is too high, he works an economic hardship, which becomes unbearable and ultimately crushes the individual of limited buying ability.

Just now, some one in the audience asks, "What has all this to do with safety?" My reply: "Just this — our worker friend has become a student of Safety First in its broader aspect. If every safeguard does not surround his daily application of business practice, he becomes financially involved, loses his accumulation of a lifetime, loses his stockholders' money, is unable to pay his workers, wrecks the economic life of the consumer, who may have purchased poorly made goods and is swindled out of his hard earned dollars. Hence is it not true that Safety First is the most important factor in the career of a successful employer, whether large or small?

He is personally responsible for the welfare of an ever-increasing group of his fellow men. He is a greater producer of goods and wealth for others, as well as himself. Doubtless, at least 99½ per cent of this audience is made up of stockholders; individuals who have given their savings in return for certificates of stock in one industry or another, to say nothing of the fact that within the past two years we have all bought to our utmost of Liberty Bonds, which are pieces of engraved paper issued by our government; therefore, we are all stockholders of the United States of America, and consequently, we are all personally responsible for the growth, safety and success of our nation. Its failure means loss of opportunity, loss of home, loss of loved ones, loss of life.

Hence, we are all involved and responsible for a safety movement, greater than the Safety Congress of the State of New York; greater and better than anything else in the world, and the keynote of its future success hinges at

this very moment upon Production! Production! and still more Production! And thus production, successful, proper and satisfactory, depends upon unselfish devotion and greater intensity of purpose, coupled with individual initiative and personal responsibility to our fellow men.

Intensified production produces contentment. We Americans are not content unless we are busy, and we do not believe we are busy unless we are creating and building that which will take the form of articles of utility, of value, and of necessity to our fellow men.

Learned physicians will tell you that the most unhappy individuals are those who have a great abundance of leisure, and little or nothing of a constructive character to occupy their mind and efforts. For every individual to whom we may point, who is suffering from nervous prostration, due to overwork, we can, if we are fair to ourselves, point to ten individuals who are discontented for perhaps a cause unknown to them, but when carefully investigated, it will be discovered is due primarily to the lack of sufficient endeavor to fully occupy their mind and utilize their surplus mental and physical ability.

The workmen who advance to a stage where they themselves become employers, can in every instance be pointed to as the individuals who have found themselves and discovered that the satisfying of individual initiative and personal responsibility has marked a constant forward movement.

Therefore, in the extension of the Safety First movement, unconsciously, we are instilling into the minds of the worker the importance of individual responsibility. A short time ago Commissioner Lynch and myself had a brief correspondence, and somehow or other, from the same angle, in looking for the cause and the prevention of accidents, both reached an agreement that the foreman could prevent the vast majority of accidents and prove the greatest benefactor to his workmen, by educating them in safety methods; and we are still in perfect agreement in this respect.

A foreman lacking in the proper degree of personal responsibility and individual initiative, is the foreman who does the greatest harm to his fellow employees. It is his duty first to assure himself that his men are content, that they are satisfied. It is his duty, as far as possible, to remove causes of dissatisfaction, and he can do so. Once the mental condition is corrected, that individual becomes a safer workman. Under his educative methods, unconsciously the workman becomes more efficient and more interested in his work, by reason of his study of safety methods.

Safety practices, after all, are the result of systematic, efficient operation. It produces methodicalness. Methodicalness is the enemy of slovenliness. Slovenliness is carelessness, and is the contributory cause of the majority of accidents. Much is said today of the necessity of teaching Americanism, and the fact cannot be controverted that one important element of Americanism is systematic, intensive endeavor.

Perhaps the printed word is not frequently placed in the hands of our co-workers. Perhaps the message is not always succinctly set forth. Take a hundred men or women. Practice efficiency, fair dealing and personal interest, and immediately discontent, slovenliness and carelessness disappear.

Unfortunately for you, this paper is much too long, and unquestionably it does not convey to you the message which is in my heart, but which I have

failed to convey, because of my lack of expression and my limited vocabulary, but I sincerely trust that from this maze of words, many of you will receive the germ of an idea, which will be possible of greater development by more scholarly individuals, and will make for the extension of the Safety First movement, to the end that the time is not far distant when preventable accidents will be occurrences of great infrequency.

When in Washington a few days ago, glancing out of a car window, I observed an inscription upon a public building, part of which I read. It appealed to me. I left the car, walked back, read it again, and immediately it so inspired me that I felt it should constitute the final message which I should leave with you. It read as follows:

"Let all the ends thou aim'st at be thy country's, thy God's and Truth's. Be noble! and the nobleness that lies in other men, sleeping but never dead, will rise in majesty to meet thine own."

COMMISSIONER LYNCH: I announce at this time some changes in the program for this afternoon. All of you will remember the eloquent speeches made by Dr. Little at previous industrial safety congresses, and this afternoon he will take Dr. Charles Eaton's place when we arrive at that stage in the proceedings, Dr. Eaton not being able to be here.

Mr. Channing Rudd will not be able to be here and in his place we have the Honorable Regis H. Post, former Governor of Porto Rico.

During the last year changes have taken place in the membership of the Industrial Commission, Miss Frances Perkins succeeding Louis Wiard, and Edward F. Boyle succeeding the late Chairman of the Commission, John Mitchell. Both of them are here and during the afternoon at some point in the program I shall ask them to briefly address you.

I am telling you these changes so that if you leave the assemblage you will only have yourselves to blame for what you have missed in these speakers that are to come.

Ever since the institution of these safety congresses, organized labor in the State has given to the movement its whole hearted and enthusiastic support. Many of the representatives of the unions attend these safety congresses. Today, as one of the speakers, we have with us the President of the New York State Federation of Labor, and I now have the pleasure and the privilege of introducing to you Mr. James P. Holland, who will speak to you as the representative of the organized men and women of the State of New York.

SAFETY FROM THE VIEWPOINT OF ORGANIZED EMPLOYEES

By JAMES P. HOLLAND, PRESIDENT, NEW YORK STATE FEDERATION OF LABOR

Mr. Chairman, Ladies and Gentlemen: Before I read the paper I have prepared I would like to say a few words to my friend, Mr. Stofer, and to tell you where he gets all the talk that he has given here this afternoon. While his paper was very well put together he told you what the workmen had done where he has charge. He didn't tell you that he had his schooling in one of the best schools that this country ever saw, some years ago, namely, the old Knights of Labor, of which he was General Master Workman. And I don't know any man that gets a better teaching than the man who belongs to these trade organizations irrespective of what that calling may be. So, Mr. Stofer had a very good training in his early days and I was surprised at him calling

himself an "old fellow" a little while ago. That was only for effect, he isn't as old as he pretends to be.

I do say that I am sorry the employer and employee do not take a more vital interest in safety congresses than they do. Attendance upon this Congress by members of labor organizations has increased year after year. I hope that they will increase a good deal further as this safety congress goes on. Perhaps the reason that the manufacturer don't belong to the manufacturing organizations is the same that some non-union men don't belong to their trades organization, it is going to cost them something.

In referring to some of the statements made by Mr. Stofer, in regard to the engineering trade, as I happen to be a member of that craft, it is true that quite a few workmen become careless after they get acquainted, as we term it, with their industry. There ought to be more inspections of engine rooms, boiler rooms, and machine shops than there is. That is no fault of the department of inspectors in the department, because there is not enough of them. The Legislature of this State, every time the Commission asks for an appropriation for more inspection of machinery, more inspection of buildings, for some reason or other the representatives of the Legislature don't put it across, as it were.

We hope some day there will be inspectors enough to give an adequate inspection of every plant they go into and not go into a plant today and let it go for another year before another inspection, which is no fault of the inspection division or Commission. If we had as many factory inspectors in this State as there are game wardens we might be able to get some work done. I don't know why we should have so many game wardens, although I don't care about putting anybody out of a job at the present time, as a good many people think times are pretty hard.

I believe that the safety congress within the short period of four years has done wonderful work, and is going to do better work, providing they get the co-operation of both employer and employee. The labor organizations of this country, whether in New York or the United States, want to protect members of those organizations with all the safety appliances that can be put in the factory or mill. We hope that the inventors who come from the trade organizations, or the inventor who gets it by, as we say, a gift, will be able to invent something some of these days so that a man or woman working at a machine, or working at any vocation, will know when they go to work that they are protected.

I remember when I first went into an engine room there was no more protection around a fly wheel or belt than an automobile you pass on the street and they want to see how close they can come to you without knocking you down. I wish, Mr. Chairman and Gentlemen, that the manufacturers and the labor organizations of the United States would work in close harmonious conjunction in the United States as they do in New York State and there wouldn't be so much turmoil and we might be able to put out that element which was responsible for the disorganization of the Knights of Labor. The American Federation of Labor has got them where they properly belong, and they won't get very far, so far as that organization is concerned.

It is my pleasant duty to bring to this congress a message of hearty co-operation from the associated wage-earners of this State, who have commis-

sioned me to say to you that your deliberations, conclusions and practical exhibits seeking the elimination of unavoidable hazards in workshops are within their experience combating and measurably reducing the number and violence of industrial accidents. I feel sure that this testimony will be grateful to you who have given so generously of your time and attention to the objects of this congress and supply the incentive, if any were needed, to continue the work so well begun.

The trade and labor unions of the state are very conscious of the value of these meetings and their results, and you will perceive that each congress is more and more representative of the employees in those occupations that contribute most markedly to the accident and disability totals. Yet that is not by any means the full measure of our active interest. We believe that the system of prevention of disablement can be extended to the whole field of industry with advantage to every personal and material factor. In our studies of the physical welfare of men and women engaged in industry we have reached certain definite conclusions, conclusions which involve the welfare of industry itself, which we believe should be submitted to you for consideration and in the hope of your approval and cooperation for their accomplishment.

These conclusions are propositions for enactment into state law of mutual health insurance for employees, an eight-hour work day for all women and minors, and state-determined minimum or living wages for women and minors. These measures, we are convinced, fall within the province of "Safety" legislation. Health insurance will be a two-edged sword in the war against disablement and contribute to higher standards of productivity, because it will assure competent and immediate treatment and complete care of sickness without accumulation of mind-numbing debt and will lift from the mind of the worker the worry that assails him when a sick member of his family is without scientific care, because a well man minus worry and distraction can devote his mind and his body to his work and its dangers most alertly and to his full capacity. The many millions of dollars wage loss calculated as the representation annually of sickness among wage-earners in this State is not the only money loss. It has a proportional counterpart in diminished earnings of industrial and commercial enterprises. Much of the joint loss account can be salvaged, and the physical welfare of employes guaranteed by a system of health insurance and sick prevention, twin measures to which the New York State Federation of Labor has set its approval and for which it seeks your thoughtful consideration. For a like purpose, and in the same spirit, the Federation also submits to your judgment the prudent regard for workplace safety that underlies the proposals to establish a maximum eight-hour working day and minimum wages for women and minors in employment. These are simple assurances of physical fitness, conceded in every wage agreement with organized bodies of wage-earners and contained in the law and practice of government employment, either State, county, municipal or federal, and recognize the limits of endurance that is to be continuous and sustaining. Departure from these recognized standards involves hazard reflected in physical breakdown. Therefore the standards should be upheld by law because that is necessary. Organization and collective bargaining, which would automatically assure these standards, is lax among women and minors in employment.

Although the numbers of them in employment are constant and in fact increasing, yet the units are not constant: the life prospect of a woman or minor is not usually within the employment they may be in now. This fact operates against general organization among them, and exposes the unorganized to the dangers of overwork and under-nourishment, two of the most potent sources of physical degeneracy. Under the circumstances, as a safeguard, the legislation proposed is necessary, and has been found necessary and been adopted in other industrial states where women and minors are not employed in any larger numbers than in our own Empire State.

A year ago it was my privilege, in the same representative capacity, to bring to the attention of this congress for special consideration the subject of re-training and refitting for industry and commerce the victims of industrial accidents who by reason of their affliction were prevented from continuing at the occupation in which the crippling was suffered. This congress then took a decided position on the legislation proposed to make this re-training a part of the work of the vocational departments of our common school system, and all of its influence and activities were mobilized behind the project. It is therefore gratifying for us all to know what the United States Congress has responded handsomely to our demand, and has set up a system of financial aid for state vocational training schools for industrial cripples that is generous and expansive. Such a consummation is demonstrative of the value of the forces that timely co-operation can assemble, and in the hope that the propositions I have submitted will by their merits enlist again that successful co-operation, I bespeak for them a full consideration at your hands.

I thank you for the opportunity to present this message and views of the New York State Federation of Labor and to again assure you of its sincere co-operation in the humane work you have so nobly advanced.

COMMISSIONER LYNCH: May I not at this time call the attention of the audience to the safety exhibit on the ballroom floor of the Onondaga Hotel? I recommend to all those attending that they give some time to an inspection, an intensive inspection, of that splendid show.

I now have the privilege of presenting to you in substitution for Mr. Channing Rudd, who, I am informed, is very seriously ill, the Honorable Regis H. Post, former Governor of Porto Rico.

THRIFT: THE SAFETY FIRST OF HAPPINESS

BY REGIS H. POST, CHAIRMAN, NEW YORK STATE LOAN ORGANIZATION

Mr. Chairman, Ladies and Gentlemen of the Industrial Safety Congress: In the first place I wish to express Mr. Rudd's deepest regrets that he can not be present with you today. He is so convinced of the importance of his message, he is so absolutely imbued with the idea of what value it would have to you, that nothing but the most serious illness would have detained him from coming here today. And, moreover, it is with the deepest regret of the Government Loan Organization and of the Federal Reserve Bank that he could not be here to do the subject the full justice which it deserves.

Now it may seem to you at first that we are intruding on this especial congress, as at first what I am going to say seems perhaps foreign to what this congress is assembled to discuss. But, I have heard two sentences, one from Mr. Stofer and one from Mr. Holland which are so absolutely along the

lines of the thought which we are trying to express, that it encourages me to come before you and state what I am about to say.

Of course, naturally in a government loan organization attached to a bank, it is more the financial problem, more the economic problem which engages our attention. But those problems are so close to you all, both of labor and of employers, that we don't wish to lose this chance to call your attention to these points. Although what I am going to say to you, you all know already, you are all perfectly familiar with it, but perhaps I can remind you of the application of your knowledge.

You gentlemen probable have not paid much attention lately to the subject of foreign exchange. It doesn't appear to you to be of particular importance to a loan organization or to a manufacturer unless he is actually engaged in foreign trade which very few of us, I am sorry to say, are at the present; I will put it this way, not enough of us are engaged in. We, all of us perhaps, are more interested in the subject of the high cost of living. We all of us know that our dollar does not go as far as the dollar did four years ago; we all of us know that it can not buy by one-half what we bought four years ago with a dollar. In fact, the statisticians tell us that the dollar today is worth in purchasing power about forty-seven cents. Very few of us, I think, realize that that fifty-cent piece is worth more melted into bullion today than it is with fifty cents, or half a dollar, stamped upon it; that the great American dollar with a hundred cents stamped on it is worth more in silver bullion. Now mark you, some of you older men may remember back in 1896 the financial and political upheaval that passed through this country at a time when silver was being, or an attempt was being made, to legalize silver sixteen to one, and the proposition of coining fifty cents worth of silver into a dollar. Today, the silver in a dollar is worth about one hundred and five, or one hundred and six cents; it is worth more today in bullion than a dollar. It means not that silver has risen so particularly, or risen out of proportion to other commodities, but it does mean that the dollar, the purchasing power of a dollar has dropped back to silver, as it has to all other commodities, so the ratio today is really more than sixteen to one.

Now, you say, how does that affect us, where does it touch us beyond the fact of making it inconvenient, or of making higher prices? Gentlemen, the world today is so bound together, no matter what our government in Washington may or may not do about the treaty; no matter what written document may come out of that legislative mill, what form it takes, there is no getting away from the fact that the business commercial world is bound together today as it never was united before. No part of the world can suffer without eventually the whole world suffering with it. For four long years we have diverted the entire productive machinery of the world from the needs of civilization to the necessities of war. We are four years behind in our production, and not only that, but we have destroyed a very large proportion of the machinery to which we must look to restore that loss. So, we have not only fallen behind in our production, but the loss of productive machinery. And, moreover, I don't know how many millions of men have been killed and crippled and put out of active service of the world. The loss in man power is perfectly appalling. I have seen it on excellent authority that the actual loss to this world, owing to the world war, was three hundred and thirty-one

billions of dollars! Three hundred and thirty-one billions of dollars of the capital fund of the world destroyed beyond hope of recovery.

Now, when you get a condition of that kind throughout the world, here and there an individual may for a time escape; he may escape direct consequences temporarily, but sooner or later where the whole world suffers this nation is going to suffer, and where the nation suffers, the individual is going to suffer.

So, these facts have an omen; they have a bearing, a direct bearing to every man, woman and child in this country. You will hear dozens of reasons for the high cost of living; you will read dozens of investigating committees' reports; you will read of the hundreds of panaceas, hundreds of ways of dodging and reducing it and putting it out of existence. But, ladies and gentlemen, I am trusting to your common sense to believe me when I tell you that there is only one possible answer; there is only one possible way to get back the loss that we have incurred and to get this poor old world back again on to its feet, and that way is just what Mr. Stofer said to you half an hour ago, that is, produce, produce, and produce. The only way in which we can create capital is to produce all that we get, spend less than we earn, and transfer our balance or save our balance to create the capital fund to restore this loss to the world.

In treating of these very things I have spoken of, Mr. Dwight Merrill, member of the firm of Pierpont Morgan & Company, a great banker, probably more interested in these questions of foreign rate of exchanges and foreign trade, in speaking of that very proposition among other things, said: "The only possible way, no matter what other details may be involved (I am quoting a substance of his speech now), no matter what other details may be necessary, nothing can be done without the help of the old fashioned man who spends less than he earns and saves so that he can add to the capital fund of the nation from which the capital necessary to put Europe on its feet must be drawn."

In other words, this great banker was not looking to the bank, was not looking to the financial machinery of the world, he was looking to every man and woman in this country to produce the necessary capital with his brains, or with his labor, to produce more than he spends and add to the capital fund of the world before these great financiers could even take the first step towards pulling Europe out of the whole.

Speaking of the low price of the dollar, purchasing dollar, Mr. Warburg, President of the Federal Reserve Board of Washington, speaking of all the difficulties of that, comes right back and states, that the only possible method of restoring the value of a dollar is to produce of our resources and to spend less than we produce, and save up the actual capital value of this country so as to put our dollar back to where it belongs.

Stop and think a moment, you laboring men and business men, you can't get along without Europe; eventually you have got to send your surplus there. You have got, as Christians, or as human beings, you have got to help your brothers on the other side of the water. But; you can't do that unless you are in a position to help yourselves, unless you have got the capital to do it, and you can't trade with them until they are in a position to pay you for what they are buying from you. You have got to finance it; think of it!

In normal times the pound sterling is worth about four dollars and eighty-six cents of our normal dollar; the franc in France, about five francs; the Italian lira, about five and one-half francs to the normal dollar. Our dollar has dropped to fifty cents, half its value. Today our money will buy an English pound for \$3.99; it will buy nine and one-half French francs; it will buy eleven Italian lira; how are those Frenchmen, Italians and English going to be able to pay us, afford to deal and pay you laborers here to help them out when they have to suffer such a depreciation in their currency? It simply puts the United States in such a position, such a wall around us, a trade wall, that they can't step over it. We can't send our goods out to people who can't pay for them. Every man who sends stuff to Europe wants to help those people out, and we can't unless, as Mr. Merrill says, unless we advance the necessary capital to Europe to pay us on long term notes.

Now, ladies and gentlemen, the United States of America is a very great country, in some ways it is a very bad government, but it is the very best government on the face of the earth today. It has been my fortune, or bad fortune to see two other governments under the stress and strain of a life and death struggle. I was in France all through the winter of 1914 and 1915, when the Germans were thundering at the gates of Paris, and no man knew when they were going to come in and overwhelm that nation. Yet, with the sound of guns in their ears those French peasants, those old French women with their market baskets on their heads were stopping in on their way from market and buying, putting their five francs behind the government because they had the sublime faith that their government was going to see it through.

And I was in Italy all through the winter of 1918, when we had been the worst licked army that the world had ever seen; loss of supplies, loss of men, and almost loss of hope, and yet those Italians were standing back of their government and backing it up because they had faith; above all they were standing by it because they had faith in the American people to pull them out of that hole. I saw it. I was out there in December and the German propagandists were passing through the army saying: "The Americans are not going to help you; the Americans are making money out of this war, they are not going to send any troops, they just want to prolong this war in order to sell you more munitions and get you deeper into debt." Then they saw you in America going without wheat, coal, gasoline, bread, so you might share it with your brothers over there. They heard of that; they saw our troops, although our troops never came until after they had accomplished their first victory, they heard of us; they saw you people here in America making those sacrifices for them and it so put the heart into Italy to feel that America was with them and behind them that it built up in six months the morale of that army, so instead of being the worst beaten army the war had seen it turned on the Austrians when they attacked in June, inflicting a loss of over forty thousand men. There wasn't an Italian soldier or civilian who didn't say the American people did it. It was the faith and the love and friendship and resources of the United States that gave those beaten Italians the hope and courage to go on and fight against the common enemy. And I tell you to-day, gentlemen, that France and Italy and England are looking to us for the same practical, cold, hard, common sense, practical support, practical spirit to raise up the industrial morale just as you raised up the fighting morale of the Italian troops.

These are facts, gentlemen, but there is only one way we can do it. Thank God, the necessity of sacrifice has gone by; the necessity of self-denial. Nobody wants you now to give up the necessities of life that you did last year. But I think that everybody in the whole world is looking to us for common sense to cut down the silly, foolish, wicked extravagances that some of us are guilty of, not to deny ourselves, but to demonstrate our common sense. They are looking to us to speed up production, to build up that wasted wealth. They are looking to us to use our common sense and spend less than we earn, and to try and save enough out of our abundant resources to pull them out of the hole that the war has put them in.

Now, gentlemen, that is the whole message of the government, it is an individual thing. The government can't make you save; the government only reflects the temperament, and the spirit, and the brains of the nation that elects them. I have heard Theodore Roosevelt say over and over again, that the country gets just exactly as good a government as it deserves. If we are frugal, sensible people the government will be frugal and sensible. If we are a wicked, extravagant people, the government will be wicked and extravagant. The government can't make you do anything, but you can make the government do anything that you really want. All that the government can do to help out on this program is to put the machinery before you, put the machinery of saving in your power and leave it to you to carry it out. And it must be. As Mr. Stofer said, it is all these problems, whether it is the safety of the employee, getting together of capital and labor; whether it is the question of the farm raising more capital that has got to be done by the individual American and out of his true Americanism.

This message isn't to the congress, it is to you, and you, and you. You have got to individually make up your minds how much you can safely, helpfully, and with due reference to your home capacities, speed up so you can produce all that you properly and honestly should. You have got to make up in your own mind what you will spend of what you produce, and how much you can individually save during the coming year to add to the capital of this nation, and the capital of Europe. We give you the machinery, the Government Loan Organization has securities designed for the purpose of saving. Any one of our representatives would be only too glad to explain to you and place at your disposal the plan and the organization which we are trying to build up. But the success or the failure of this thing rests with the individual American, thinking for himself, making up his mind for himself, and not looking to the government to do it for him; taking advantage of the means which the government puts at his disposal, knowing that in so far as he succeeds he pushes this country and this world ahead towards the goal that we are reaching, and in so far as he fails he holds it back.

I wish that somebody could invent a new word for thrift. It is the coldest, bleakest word in the English language. Somehow or other we tie it up with disagreeable things; we tie it up with penury. And, somehow or other down in New York they think that the worst name that you can call a man is a tightwad or a piker. And yet, gentlemen, this country was developed by tightwads, there isn't a cent of capital in this United States to-day, there isn't a cent of wealth that wasn't created by somebody's brain, somebody's labor and people who produced more than they consumed. If our ancestors

had, as fast as they made their crops, burnt them up or eaten them, or thrown them away; if our ancestors had consistently spent every cent they earned you and I wouldn't be living in the most prosperous age in the world. Then it was more discredit to be called a spendthrift than a tightwad.

We don't want sacrifices, as I said before, but we do want common sense in spending.

And now, ladies and gentlemen, that is the whole extent of my message. For any of you who are interested, our whole machinery is at your disposal for factory and for home. We have forms of securities designed for the purpose of letting men save on the easiest terms that they can buy, weekly terms. And speaking of that, I want to bring out another point before I close, and that is, it is the duty that you leaders of labor and capital owe to your brothers in regard to their financial investment. Remember it is only two years ago, and less than that, we put out in the hands of twenty million persons, government loans, government bonds. Everybody knows that eventually those bonds are going to be worth one hundred cents on the dollar, probably more, but everybody equally as well knows that a bond which is issued and which is not redeemable for less than thirty years is subject to the laws of supply and demand; it is subject to what a man can sell it for. A good many of our bonds are selling below par now, and many a man who bought government bonds at the time of the government loan has got a feeling of disgust, a feeling of sorrow, and a feeling that he has been tricked by his government, because he was told by over-enthusiastic bond sellers during the loan that he could always get a hundred cents on the dollar.

Now, gentlemen, we owe it to our friends to tell them to hold on to their government bonds until those bonds come back to par. It is a curious thing about human nature that when a security is going down everybody wants to sell, and the more people sell, the more they go down. But when a thing starts to go up then everybody wants to buy, on the idea that because a thing goes up it is going to continue to go up. That is an old, old thing known to stock gamblers to get in on a rising market and sell on a decline. Wall Street sharks always get the better of the public, because they know enough to buy on a declining market and sell on a rising market.

I am told on good authority that before this war there were not over three hundred or three hundred and fifty thousand individuals in the United States that were what you call the bond-holding class. Today we have between twenty-five and thirty-five millions of people holding government bonds, so you can see that only a small per cent of those know how to handle those bonds, know what to do with them. Now, you laboring men, you factory owners, go back to your people who own government securities — perhaps a man has a fifty dollar bond or a hundred dollar one; perhaps he wants twenty-five or thirty dollars, sickness in the family, he has bills to meet, take him around to the bank and show him how he can borrow on that bond. Don't let him get in a panic and go out to the first speculator he meets who gives him what he sees fit by gauging his necessity for the money.

I have heard of a bond being sold for thirty-six dollars, one of these ignorant people who didn't know the true value of the bond. We owe it as a duty, we who induce people to buy government securities, to protect them. And, where a man is capable of it, tell him to buy more bonds. That is another

old trick of Wall Street, where a man has bought stock at fifty and the average price is seventy-five. He averages up his price and the man who bought a liberty bond at par could get one at ninety-three, two of them will stand at ninety-seven, and you will be even with the game.

Where he can, has got some money to invest, tell him to put it into liberty bonds, hold his nerve, hold his Americanism, hold his common sense and not to throw away his good securities at a loss; that those securities are perfectly good, and if he needs money, take him to your banker, some reputable people who loan money. Those bonds are perfectly good security and a man can borrow what he needs. That isn't finance, that is friendship.

So I beg of you gentlemen, representatives of both capital and labor, and employers here, remember the men who don't know as much as you do, foreigners, men who never owned a United States bond before. Protect your friends, protect them financially as you protect them against the loss of life. Safety first; yes, but the safety that comes from common sense; the safety that comes from absence of panic; the safety that comes in the absolute faith in this government and in this people; the safety that comes in knowing that as long as our flag hangs over us, that the American idea is to level, but to level from the bottom up and not from the top down.

As Mr. Holland said, there is an element working in this country to-day that is only too glad to throw discredit on the government; to throw discredit on the sensible worker in every way; on the conservative, safe, sane man who is advocating the safe proposition. The only way to level is to dig down from the top to the level of the lowest. But, gentlemen, speaking as an American to Americans, I don't need to remind you that the whole system of our government, the whole law of our equality is based on the right of a man to level up, and not to tear down. That is my message, ladies and gentlemen.

COMMISSIONER LYNCH: At this session of the fourth industrial safety congress, we have eliminated the evening sessions, except to-morrow evening there will be a concert. I am sure you will all want to attend.

At this time I shall ask Commissioner Frances Perkins to say a few words to you.

REMARKS

BY FRANCES PERKINS, MEMBER, NEW YORK STATE INDUSTRIAL COMMISSION

I have always wished that we might have in this State of New York, as well as in other States, of course, an automatic self-enforcing law, because it has been my observation there has been no successful law enacted that does not have the loyal intelligent approval and the sanction of the people that have to live and work under that law. No amount of inspection by the Labor Department will have been comparable to the moral sanction of this industrial congress in securing the sound, sensible, progressive ideas conforming with the labor law, and I believe this congress has a very serious future before it. Because you represent in this body, not only the practical working men in the shops and practical working women in those shops and factories, you represent also the scientific men in those shops. You represent employees and employers and organized and unorganized laborers, and those who can go out into these shops and factories and see some new things that are not

embodied in our standard code, and ought more and more to be accepted by this body. And so I feel that out of this industrial congress there ought to come year after year some very sober recommendations. General recommendations as to what ought to be adopted and later, after they are really well established in the mind and practice of the best industrial elements of the State of New York, they ought to be put forth as statutory requirements.

That is why I think this body holds in it the germ of automatic labor law, and I hope you will take upon yourselves the responsibility of developing that kind of a program as the years go on.

COMMISSIONER LYNCH: Coming to us with a record as an administrator in other fields and in public offices, the new Chairman of the State Industrial Commission is an augury of great achievement of the State Department of Labor. I am sure we all welcome him here and we will all be pleased to hear from him. I have the pleasure of introducing to you the Chairman of the State Industrial Commission, the Honorable Edward F. Boyle.

REMARKS

By EDWARD F. BOYLE, CHAIRMAN, NEW YORK STATE INDUSTRIAL COMMISSION

I find myself wishing that Commissioner Lynch had made it a duet for Miss Perkins and myself. I might have struck a little minor chord and got away with it quietly.

I think this safety first idea is a good one. I came up with the very placid and contented feeling that I should not be called upon to say a word; that I might sit here and listen, absorb, and go back to New York and to the duties of the Commissioner's field with a great knowledge and in that way get away with some things that I have found myself struggling with in the past two weeks. The safety first idea, as applied in my case, would have been to prepare something, or to ask Commissioner Lynch, or Commissioner Perkins, to prepare some paper that I might stand up here and stall for a few minutes and perhaps get away with it. They say that an open confession is good for the soul. Commissioner Lynch probably had in mind that he might purge me of all my past iniquities by having me rise here and make the confession that there is very little that I might say to this gathering that would be interesting, along the lines of its chosen and particular field, at least at this congress. Perhaps after another year has rolled away, if I am not pitchforked into some other job—they seem to have been doing that lately, sometimes with the consent of the people and sometimes without—if I am here for another year I may be able to say something of interest.

I have had the germs of some ideas that have direct relation to the work of this congress. Since getting into the actual activities connected with the commissionership a great vista has opened itself to me, and I haven't the least doubt if I am to do justice to the office to which I have been chosen, and if I am to discharge the duties of that office with any degree of success, then I must of necessity familiarize myself with many of the things that you women and men are dealing with this afternoon. I am greatly interested. I came here, as I told you, with the idea of listening and I have been very interested as I sat here.

Coming up on the train I had the benefit of advice, discourse and discussion with many wise heads, those who have been in touch with this particular

class of work. I find that their ideas and mine, nebular as my own ideas are, join in a very nice way and I haven't the least doubt that I shall be able to pick up the work and your ideas and go along with you.

As I said before, I am interested in the work deeply, keenly, and constructively interested, and I am glad to be here. I welcome the opportunity that Commissioner Lynch has given me, not for the purpose of saying anything that would be of value to you assembled here, but rather that I might say to you that in heart and in spirit and in mind I am with the work of the Commission; that I want very much to go along with you and to work with you along the lines that have been indicated here this afternoon and that have done so much to build up in this State of New York, largely through the work that these Congresses have outlined, the high standard that our industrial program, as laid down in the statutes, has reached in this great Empire State.

COMMISSIONER LYNCH: Tomorrow will be Foremen's Day at the Congress, and I am sure that it will be a most interesting part of the Congress and you can't afford to be away when the foremen are considering their problems.

I have been asked to announce that on Thursday, December 4, at one o'clock there will be a luncheon at the Onondaga Hotel at which Dr. John A. Lapp, Editor of *Modern Medicine*, and Miss Margaret Bondfield of the British Labor Party will speak. Tickets are one dollar and are on sale in the lobby. Tables for six or eight may be reserved.

Now then, the last speaker on the program, but I think you will all agree with me if I become a little trite and state that no one has been more deeply interested than he in the safety movement in general, nor has any one else manifested a greater willingness to cooperate with us in these Safety Congresses. I take pleasure in presenting Mr. R. M. Little.

AMERICANISM

R. M. LITTLE, DIRECTOR, SAFETY INSTITUTE OF AMERICA, NEW YORK CITY

Americanism means certain fundamental concepts of American life. It is a word of at least four dimensions, signifying justice, liberty, opportunity and fraternity. Perhaps first of all, Americanism means a profound belief in the worth of human life and that in all human beings there is something noble, that they are endowed with great possibilities and that man is the apex of the whole creation. We take an attitude, therefore, towards human life when we pronounce the word Americanism. We will touch only a few of the root ideas of our conception. Let us look at Americanism first from the governmental point of view. We American people believe our government rests upon the consent of the governed. The Declaration of Independence, our Federal Constitution and all state constitutions have been established by a majority vote of the electors. Our laws are enacted and administered upon the same principle. "The people" now means in the State of New York, and rapidly will mean in the forty-eight states, the men and women twenty-one years of age and over who are citizens. Electors include both male and female. Government resting upon the consent of the people, therefore, it is by the people and for their welfare it exists. We believe that all men are endowed with certain unalienable rights, and among these are life, liberty and the pursuit of happiness. These unalienable rights are to be

granted to all of the citizens of America and to all of the people who live in our country. This is a root idea of Americanism from the governmental point of view. The government is to be preserved by the people for the welfare of the individual citizen and for groups of citizens. They are assured a certain equality before the law, in the schools, in industry and in social development. They are assured certain opportunities for self-development and self-realization, that they may enjoy the richness of life. These are governmental principles in our conception of Americanism.

Let us next consider the question from the point of view of nationalities. Does Americanism mean the Anglo-Saxon type of national life? Perhaps most people think that it does. The Anglo-Saxons colonized the United States and led in the development of our national government, institutions, laws, manners and customs. The Anglo-Saxons are the dominant influence in our nation. In view of our national development, however, and the many types of people who have become citizens, we should not aver that Americanism is synonymous with the Anglo-Saxon conception of life. This conception may be the dominant one, but it is certainly being modified by many other types. It seems to me that Americanism means something broader and more inclusive than that type of life which first obtained in New England and Virginia. America is not only for the Anglo-Saxon people, but also for the liberty-loving people of other nationalities and races. If we were to resolve the question of Americanism upon the rights of priority, I suppose the Indian tribes would be more entitled to call this land their own than any of the rest of us. This recalls to my mind an illustration of Americanism that I learned one day out on the Pacific Coast. We were engaged in a baseball game with an Indian tribe. I made a base hit and was attempting to steal second. The pitcher tried to catch me at the base, but I was safe. The first baseman and the pitcher were exchanging some Indian jargon as well as the ball, and I said to the baseman, "Why do you not talk the American language? He retorted, "Why don't you?" My language was the English language, his was the original American.

So, when we discuss this question of Americanism and what America stands for, we should not say that it is represented by the Puritans of New England alone, nor by the Cavaliers of Virginia, nor by the descendants of both these types living about the Great Lakes, nor by the "Forty-niners" and their descendants who went to the Pacific Coast. The Indians are not typical Americans, neither are the descendants of the Spaniards and Mexicans; nor are the Negroes who were brought here as slaves, or the recent immigrants from south Europe. Americanism is broad enough to include the values of all these nationalities and strains of the human family. America is not for one race or one tongue, or one type of people alone. Our country is too great in its possibilities and opportunities; too inspiring in its principles and ideals to be limited to any national characteristic of the rest of the world. With a substantial basis of Anglo-Saxon ideals and principles, love of liberty, justice, morality and truth, we are developing a great nation which is to invoke and develop the highest qualities of many peoples and fuse them together with one spirit, one great purpose, but with many diversities of customs and manners.

In Drinkwater's dramatization of Lincoln there is one scene which is most impressive, that where the Great American is standing looking at a map of

the United States. The extent of our physical domain is the basis for empire like unto which no other people enjoys, and the other nations of the world have been pouring their life-blood into this great empire or republic. As Americans we are building stronger mansions for our souls, and all people who share in our national life are going through a process of self-realization and self-development under equal rights, equal laws and equal opportunities for the development of the larger meaning of human life. America is in the vanguard of human progress and will be for generations and perhaps centuries yet to come.

There have been many attempts through provincialism to limit the conception of Americanism. There has been the cry, "America for the Americans!" The Know-Nothing Party of half a century ago had this limited conception. There have been recurrent attempts to define Americanism according to certain colonial types. These ideas still persist and not a few seriously wish that none but Anglo-Saxons and their close kinsman should be welcomed to our shores. This is hardly true to the Genesis of Americanism. Our national life will not be thus confined. It will not be so limited. Because of its fundamental conception of human nature, Americanism is not selfish, unjust or illiberal. Americanism is something that is deep and broad with height and reach for all of humanity. Let us free our minds, therefore, at the outset of our discussion of any petty small ideas of our country or of the people who live here, and strive together in the making of a great republic of men. An expanding view of our national life needs to be emphasized in these times, because we hear the voices of the descendants of the Puritans talking in a very small way about America and Americanism. We hear the voices of certain descendants of the old Cavaliers talking in an unworthy way of the principles of this country and its development and destiny. I am not unmindful of the great contribution which our forefathers made to America, but from my point of view I cannot think of an illiberal America, a selfish, exclusive America; nor do I believe in an isolated America which shall not participate in the whole life of the world. We may be properly concerned to safeguard our inheritance, conserve our strength and defend our interests, but our inheritance and our strength and our interests are not such as to cause us to be afraid to do our part among the nations of the world, to insure a larger liberty and a more complete justice and a fuller life for all other nations. The world grows and moves on and we must move forward with the tide of the world life. World events have drawn us out of our isolation and America now must play a leading part in the further progress and development of the world. Our manifest destiny is partnership and service, and we will best develop our own national life, conserve our inheritance and develop our strength, by co-operative service with other peoples.

America is still in the making, but we have had and now have many men and women who typify the principles and ideals of our country. I think of myself only as an American. My forefathers fought in the Revolutionary War in the Carolinas and Georgia. They moved north of the Mason and Dixon Line because of slavery. I was born in southern Ohio, educated there and in Illinois. I have lived on the Pacific Coast and on the Great Lakes, at the confluence of the Allegheny and Monongahela rivers, and near Independence Hall. I have been a sojourner in the National Capital and I am now a

resident of the Metropolis. I see very real Americans in New York; I meet with them in New England, I know many of them in western Pennsylvania, they thrive in Chicago; they are numerous in Portland and San Francisco; and I have fellowshipped with them in Jacksonville and Memphis. They are all over our country, men and women who are typical Americans, of the same stuff that was in Abraham Lincoln, John Hay, Ulysses S. Grant, Thomas A. Edison, Theodore Roosevelt and Francis E. Willard. It has been an inspiration and a delight to meet the men and women throughout our country who share in the same principles and ideals of life which is best described by the word, Americanism. Their minds and hearts are a veritable source of truth, liberty, justice, morality and the passionate aspiration for all those values which make life sweet and satisfactory. I like to recall these splendid men and women of our country who are so rich in their sympathies, broad in their reason, energetic in their spirit, forward-looking in their endeavors, and are helping to build a national life which in its ideal shall be perfect and entire, wanting nothing.

But this is not what you invited me to speak upon, I am quite sure. This is Americanism. You also wish to have something said upon Americanization. Only as we have clear ideas of Americanism, however, can we intelligently consider Americanization. Americanization is a popular subject of the hour. It is being much discussed and many plans and methods evolved for its development. In short, Americanization means making good, loyal American citizens out of those in our midst who are foreign-born and many of whom speak only foreign languages. The subject is of great importance because of the large number of people in our country who were foreign-born. According to the census we have now in the United States some thirteen million people of foreign birth, one-half of whom have not yet been naturalized and about one-half of whom do not speak the English language. They live for the most part in our large cities and industrial centers and are spread widely over the northern part of our country. The question of their Americanization presses upon us in our schools, in our politics, in our government, in our religious life, and particularly in our industries.

Let us try to define what we mean by Americanization. It is the process of making good, law-abiding, loyal American citizens out of those who were born in foreign lands, many of whom speak foreign tongues. This is what we are aiming at by Americanization. The problem of Americanization is being approached from a great many different angles and by many methods. With characteristic hurry and impatience we are attempting to accomplish the task speedily, but we often fail to remember the history, the traditions, the characteristics and the instincts of the people we would Americanize. We approach people of foreign birth and try to put a placard upon them to perform an outward operation that will turn them into American citizens as by magic. We proceed to try to Americanize the foreign-born with a specially thought-out stereotyped process, but without fully considering the fundamental factors involved. We Americanize them by naturalization laws; we would Americanize them by teaching them the English language. We would Americanize them by having them drop their national customs and manners and adopting our own. We think they would be Americans if they were just like we are. But something more comprehensive and funda-

mental is involved in the process of Americanization of people of foreign birth and speech than is presented by any of these methods. Let us not forget that America herself has been in the process of formation since the time that the Puritan forefathers landed on Plymouth Rock, and our country is still in the making. All people who live here are changing, varied in their characteristics, although sharing certain great fundamental things together. Those who have come in recent years, whether they have been naturalized or not, have entered our country to share its life, to imbibe its spirit, and they are becoming Americans by the processes of life, assimilation, adaptation and ambition. The first step in their Americanization was their decision to come to America. This decision marked an epoch in their lives. Through many influences they learned to believe in America; to believe in it as a land of opportunity. America appealed to their imagination as a land of freedom, of hope and of promise. When they acted upon their decision and belief, they left the lands of their birth and came here, most of them to stay, and only a few hundred thousand ever to return. This was the first step in their Americanization. This step put them in a continuing process of growth and adaptation into our political activities, our principles and ideals, our institutions, customs and laws. They are here sharing in our national life and they feel the formative influences which are nation-wide in their extent, tremendous forces which affect the thought, feeling and action of foreign-born men and women when they step upon the shores of America. Our national life appeals to them as nothing else ever did, and most of them respond to this appeal whole-heartedly and with promise. This applies, of course, to the normal men and women, not to the criminals, nor to the imbeciles and the incompetents, which are inconsiderable in number. Perhaps the administration of our immigration laws should be more rigid, that all undesirable immigrants might be excluded. But their number is inconsiderable as compared to the thirteen million of foreign-born people who are now in America and who have entered into the process of becoming genuine Americans.

What shall be the attitude of America toward the people of foreign birth? Shall it continue to be an attitude of questioning? If we expect to Americanize them we must believe in them. They believed in America and now it behooves those of us who make up the majority of the citizenship of America to believe in people of foreign birth. How can we do otherwise? Just at present it is not popular to champion their cause for the reason that the foreigner, so-called, is accused of a great deal of the public irritation and disturbance. No doubt they are unjustly accused in a great many cases. It is popular to make the foreign-born the scapegoat. But if we will carefully investigate the facts and analyze the conditions we will frequently find that it is not people of foreign birth and tongue as much as other forces who have raised the disturbance. Quite true, there are a few thousand agitators, radicals, revolutionists and Bolsheviks who are attracting a great deal of attention and most of them merit the treatment they are receiving. But what are a few thousand in comparison to the nearly thirteen million law-abiding, industrious and loyal men and women from other lands who are in our midst. They are sharing our national life and doing much of our work, and in many respects they represent the youth, virility and strength

of the countries from which they came. They came as vigorous young men and women to use their muscles and their brains in our industries, and while they are concerned for their own advancement, they make a contribution to our national life which is rich with the traditions of many centuries. They came not only to do our work, but also to help sing our songs, to write our literature, to please us with their music, their manners and their customs. They help to enrich our national life and we ought to believe in them and their possibilities. For Americanization first of all means a certain attitude towards human life and there has not been anything in the past of these people of foreign birth to cause us to turn them aside and say that they are unworthy of belief.

There is one beautiful little spot in Washington along Pennsylvania Avenue in front of the White House called Lafayette Square. In one corner of this charming park is a statue of the Marquis of Lafayette. In another there is a statue of Kosciusko, a liberty-loving Pole, and in another a statue of Baron von Steuben, a liberty-loving German; and as you go on through the park and look at the various statues you will see typified in heroic form the men of foreign birth who have fought mightily for the foundation of America and the descendants of these patriots have largely followed in their footsteps. Let us believe in them. Furthermore, we or any of the people of the old American stock should divest our minds of a certain attitude of contempt for the foreigner. This is all too prevalent with us and it is being accentuated at the present time. Looking down upon the man of foreign birth ill-becomes an American who believes in liberty, equality, fraternity and square dealing. We demean ourselves when we treat those of foreign birth and speech with contempt. We reveal our provincialism and narrowness of mind by such an attitude.

Our laws and our administration are an important factor in Americanization and the substance of our laws is just and right, but the administration of our laws is frequently not as well wrought out as the substance. The Declaration of Independence, the Federal Constitution and the constitutions of our various states and nearly all our statutes have been conceived in justice and in fairness for all the people. The foreign-born is frequently at a loss to understand the disparity between the principles and ideals of our substantive law and the action of our police departments, police and magistrates courts and the courts of record, nor do they well understand our legislative processes. If this is a land of liberty and justice, why is he so often treated as he is by the police and the minor courts? Why can he not more readily and cheaply secure redress from the wrongs by his landlord and his employer, or by his fellow-countryman? The processes of our courts are not adjusted to the needs of the poor man, though he is an American; much less are they adjusted to the needs of the foreign-born. There is a great national task before us to make the administration of law as just and adaptable to the needs of life as the fundamental conceptions of law are to the needs of all people. It is only within the last few years that there has been established any place a poor man's court, a workingman's court, where he can secure substantial justice. Yes, he has always had the police court and the magistrate's court, but they are not courts of record, nor have they always been courts of justice for the poor and disadvantaged citizen. The Municipal

Court of Chicago, the County Court at Pittsburgh, the Court of Domestic Relations at Philadelphia, and some of the courts in New York City approximate the needs of a poor man's court. But throughout the country the workingman and the foreign-speaking man is often deprived of substantial justice, even though the laws underlying the courts were framed in a spirit of justice and fair dealing.

If you will read the recent report issued by the Carnegie Corporation on justice and the poor, you will be convinced of the fairness of this criticism. Often the foreign-born is confused by our practical political methods. He thoroughly believes in our fundamental conceptions of government, but he does not understand the way we do things politically. Of course, we do not have an ideal government and it is always a party government. It does not matter which party is in power or which one is seeking to come into power. As a result the foreign-born get tangled up in our politics and they are often misused and exploited, and as a result they have a wrong conception of our government. Who is to blame? Are they, or are we Americans? Should we leave them to be instructed as to the principles and methods of our government and our politics by political workers, or should we open night schools for them where they can be instructed in civics and in our political methods?

One of the greatest influences to Americanize the people of foreign birth that we have is our schools. The problem of Americanization does not apply so much to children of a school age as it does to adults. Their children in the public schools have the finest influences about them for Americanization that there is in our country. There is something like democracy, life and liberty and fraternity in the school room. One of the miracles is the way the children of the foreign-born respond to the opportunities of the public schools.

What are the churches doing towards Americanizing the foreign-born? Most of them are impelled by pious wishes and good intentions, but do not understand the task they have undertaken to perform. Unfortunately, many of the churches have a narrow and sectarian view of the matter. They fail to recognize the traditions, the aptitudes of the many people who come to our shores. Church organizations as such are not effective agencies for Americanization, except as the people of foreign birth naturally become members of these church organizations. The attempt of Protestant churches to Americanize the foreign-born from south European countries who belong to the Roman Catholic Church or to the Greek Orthodox Church is rarely successful. It seems to me that it would be much better to encourage the people of foreign birth to establish their own churches and to be loyal to their own religious traditions, beliefs and associations, than to try to win them to a form of church organization and worship which is to them strange and non-appealing. In America the church and the state are independent of each other. It is one of our fundamental convictions that they should be separated and that all citizens should be free to worship God according to the dictates of their consciences without anyone to molest them, and, as our Puritan forefathers and the Cavaliers contended for this right for themselves, America should conserve this right for all people who come to this country from other lands. It is better for America that these religious units should not be meddled with and broken up. Not to welcome their loyalty to their church, their creed, their worship and their priests is a mistake.

How can our industries help to Americanize the people of foreign birth? Work is the major interest of life; eight hours per day at least, and often more, is the daily task of these people of foreign birth as well as for the rest of us. Where can they find what America is and where can they find their self-realization in America if not at their jobs, in our factories, in our mills, in our mines and our transportation companies? Foreign labor is indispensable to the continued growth and development of the industries of America. As their labor is indispensable, it behooves the industries to give them a square deal and not exploit them; see that they have equal treatment with everybody else. This is what they expect. Do not play upon their ignorance or fears or their prejudices, but treat them as men and women worthy of their hire and of self-respect. The industrial attitude towards the foreign-born should be one of kindness and considerate and intelligent treatment. Americanization in industry is a mutual process of give and take. We take from them and give to them. They give to us and take from us. The process is as reciprocal as life itself and is an important factor in the building up of our industries. Industrially we must understand them, believe in them and sympathize with them. This is not always the attitude of our American industries towards the foreign-born. There comes to my mind a remark of an official in a South Chicago steel mill who said to me the other day, "I cannot do anything with these 'hunkies' unless I swear at them and occasionally throw brick bats at them." Lamentable, but true, that often the first words which the foreign-born workman has learned in a factory or mill have been words of obscenity and profanity. Who is a "hunkey?" He may be a John Huss. Who is a "dago?" He may be a Savonarola. Oh, these epithets of contempt! In our industries let us give them a fair deal, pay them a living wage, be patient with them, try to understand them and always treat them fairly. Many of our industries are doing a fine service in teaching the foreign-born the English language. This is an important factor in their Americanization and one which I would emphasize and not minimize. We should not forget, however, that learning to speak the English language does not mean complete Americanization. They should learn the common language of the land where they live and work, as a means of communication, a vehicle of thought, that mind may understand mind and that work may go along more smoothly. The teaching of English is of high importance in this respect, but I am thinking of something more fundamental than acquiring a language. The process of Americanization should mean for the foreign-born the question of a new point of view, the sharing of our national life, the development of a greater loyalty to our country, its institutions, its laws and purposes. It is quite possible for them to learn the English language and yet not be Americans in this full sense. I plead, therefore, that in our attempt to Americanize the foreign-born, we try to wed them to the highest conception of Americanism.

Some of you may think that I have been too much the champion of the foreign-born and foreign-speaking people. Let me call your attention to the fact that they have been splendid in these years of stress. True, the newspaper headlines often give them a rather sinister aspect, but newspaper headlines do not tell the whole story. What did the foreign-born do in the Liberty Loan campaigns? The Treasury Department reports that in every Liberty Loan the foreign-born fully subscribed their quota, and in the Fourth Liberty

Loan, the foreign-born people took up twenty-six per cent of the bonds. Where a man's treasure is there his heart is also. The hearts of thirteen million foreign-born and foreign-speaking people were almost unanimously with America in the World Struggle. What sort of soldiers did they make? Ask any of the young officers who were in France and in the thick of the fight. The foreign-born soldier did his part as a brave, loyal American. Pardon a personal reference, but my son started as a lieutenant in the Battle of the Argonne with a company of two hundred and fifty men, many of whom were foreign-born and who could not speak the English language when they went to the camps. He returned after five days fierce fighting with but 50 per cent of his men, but never once was a foreign-born soldier a quitter. He went east of the Meuse and was engaged in the final drive with a company of one hundred and seventy-five men until 11.15 on Armistice Day; standing before a strong German position with many of his men dead and wounded about him and others still fighting, but not once did a foreign-born soldier falter or fail to do his duty. Get the inside stories from the young officers who were on the firing line and you will be thrilled with the bravery and heroism of the Italians, the Hungarians, the Greeks and the Poles who fought under the Star Spangled Banner because they believed in America. We need the foreign-born people in our country and they need to imbibe the ideals and principles of our land. We need them in our social life, our school life, our religious life, our industrial service. There is good human stuff in them and they will make loyal and dependable Americans, as patriotic and devoted to the interests and destiny of our land as any of the rest of us. Let us try to understand them, always respect them, treat them with that consideration which is in harmony with the fundamental principles of Americanism. Show to them kindness and sympathy in all the affairs of life, in our courts and in our politics, in our schools and in our industries, and then we will help to make a larger, a grander and a finer American nation.

TUESDAY MORNING, DECEMBER 2

FOREMEN'S DAY

PRESIDING OFFICER: W. H. CAMERON, MANAGER, INDUSTRIAL RELATIONS,
EASTMAN KODAK COMPANY, ROCHESTER, N. Y.

MR. CAMERON: Ladies and Gentlemen: I take great pleasure in extending to you the welcome of the Industrial Commission to this meeting. You will be very much interested to know that all of our speakers are here. The crux of the whole accident prevention problem lies with the foreman. Our program, as you have noticed, is divided into one hour for each subject and after the speakers have discussed the problem I am going to have the meeting thrown open for discussion. Please announce your name, name of your company and place of residence so the stenographer may have it for the record.

Years ago I attended a meeting in Carnegie Hall to hear Theodore Roosevelt make a speech. I went also to hear Mr. Hamilton Wright, who made the introductory remarks. When he got up he said, "I introduce to you Mr. Theodore Roosevelt of New York." It was the best introduction I have heard and I am going to follow that today. Therefore, ladies and gentlemen, I take great pleasure in introducing to you Mr. B. M. Nussbaum, of New York City, who will talk to you upon the subject of "The Modern Foreman."

THE MODERN FOREMAN

BY B. M. NUSSBAUM, VICE PRESIDENT, BUSINESS TRAINING CORPORATION,
NEW YORK CITY

Yesterday you heard addresses from several distinguished men. It was fitting that the first day of an important congress of New York industrial representatives should be devoted to a discussion of broad industrial subjects.

Upon the broad principles brought out yesterday, must be based our investigations into any particular phase of industry. In the field of safety work, for example, we find it impossible to disassociate our findings from basic tendencies in personnel management that are being woven into the entire fabric of our industrial development. It is up to the safety engineer, therefore, to be a thorough student of these tendencies, to interest himself in many ramifications of the personnel problem. In fact, the history of the National Safety Council clearly points to the inseparability of safety development from other personnel activities.

Today your discussions are scheduled to contract from the general to the particular and it is my privilege to introduce the first of these subjects on your program. Since safety work has become so firmly integrated with the entire personnel movement, it is eminently logical that you should start your safety discussions with a study of the man who occupies the strategic point in every phase of personnel work you can mention. I refer, of course, to the foreman. The foreman is the man you all have to work through. The industrial engineer has his eye on the foreman, because he knows that through him his efficiency system will succeed or fail. The employment manager is cultivating the foreman because he is absolutely dependent on his co-operation.

The safety engineer depends no less on the foreman with every conceivable guard and safety device installed, backed by the most elaborate program of safety education. Your campaign will stand or fall on the amount of safety consciousness infused into each department by the foreman.

It is this realization that has no doubt led Mr. Daly and his associates on the program committee to make the foreman the keynote of today's deliberations. It is pertinent to inquire into the nature and needs of this all important link in the safety chain. What are the functions he should exercise, what traits should he possess, how may these traits be developed, how can we make the foreman a more valuable instrument in reconstruction of industry? These are the questions to which I shall address myself this morning. The views I shall offer you have been accumulated from a previous experience in plant management and a more recent experience in helping some two hundred concerns to develop their foreman.

As I have said, safety work has become firmly rooted in the entire personnel movement. I was struck, as perhaps some of you were, by an article in this week's *Saturday Evening Post*, "The Noncoms of Industry," by Floyd W. Parsons. And, lest a number of you here didn't chance to see that article I am going to take the liberty of reading the first paragraph:

"One widely accepted plan for improving working conditions between management and men is based on the idea that industrial stability is best assured by educating foremen in human relations and also in business economics. The champions of this plan point out that the foreman is the real noncommissioned officer of industry; he is the one person who is in direct contact with the workman and it is from him that the laboring masses obtain their impression of their employer. This being true, the argument is advanced that there can be no labor solution unless the minor executives are trained by intensive methods. The contention is that every company proposing to adopt some form of industrial democracy should first see that all of its foremen are thoroughly instructed in the primary economics of industrial management. Success is thereby doubly assured."

I am not bringing up the question of industrial democracy; I simply quote that as an example of the great prominence that is being given in every industrial gathering, in every article on human relations in industry, to the question of the foreman, his needs, his traits, and his development.

Now the first thing I think we ought to consider in that connection is the change that has taken place in the status of the foreman. There has been a very striking change in his duties and his responsibilities. Specialists are assuming many of his former duties, but they do not relieve the foreman of his responsibilities. The foreman, in other words, remains the head of his department in the truest sense, the man who is responsible for the output, for the spoilage, for the discipline, and for the progress of that department. But, men are coming in to help him; cost accountants are making it unnecessary for him to worry about the figuring of costs; the safety engineer is installing guards and promoting safety education so that the foreman is relieved of these details; the planning department is scheduling work and keeping track of job tickets so that the foreman doesn't have a lot of that detail to worry him. But at the same time, the foreman is the responsible executive in charge of that department and must correlate all of these staff

activities. He must understand them. I think his new duties may be summarized under two heads: Administrative on the one hand, and human engineering on the other. We have not yet gotten to the point where the foreman is relieved of all administrative duties. Mark you there is a difference between a duty and a responsibility, which you all recognize. We are trying to get the foreman to the point where he will have fewer duties of detail but just as much responsibility for results.

The administrative functions of the modern foreman, shared with staff departments, may be listed as follows:

(a) Planning work or carrying out the plans of the planning department; (b) organizing his department for maximum production; (c) analyzing the jobs in that department, and helping set standards of work and compensation; (d) supervising inspection to insure good workmanship; (e) keeping up machines, tools, and equipment to the highest degree of efficiency; (f) keeping up the material supply to correspond with current needs and future needs; (g) helping to keep records of costs and production; (h) reducing waste caused by spoilage, by delays, by idle machinery, by the lack of system and discipline, or by absenteeism, and (i) developing competent understudies.

These administrative duties are divided up in varying degrees between the foreman and specialists from the staff, depending on the degree of organization that exists in different plants. There are plants, as you know, where practically all of these administrative duties are assumed by other people than the foremen, and the foremen merely co-operate with them.

The second set of functions of the foreman is on the side that I call human engineering. That includes:

(a) The selection, upgrading and adaptation of employees. (Even then he is often helped by a specialized department—personnel); (b) the foreman has also the duty of interpreting the policies of the management to the men; (c) interpreting the point of view of the men to the management; and (d) encouraging, teaching, energizing, stimulating the men, infusing the team spirit into them, building up what we might call "labor good-will."

Now I feel that this second set of functions on the side of human engineering is a lot more important than the first side, the administrative functions, because, as was pointed out, those executive or administrative functions are being absorbed by specialists who are a part of the company's organization of production control. The human engineering side is a function that nobody but the foreman can perform adequately. You can't manage a group of men if you are away from them; you have got to be on the job with them, you have got to be close to them, you have got to understand them, you have got to build up this confidence in you by close contact. To do that means that you have to be associated with them as the foreman is associated with them, and of course, the ideal condition will be when the foreman co-operates with the staff members and management in seeing that the administrative functions are properly performed, co-ordinating them, and understanding them, but concentrating on the job that he can do best and he alone can do, and that is, building up an "esprit-de-corps" in the plant through skillful human engineering.

When considering the true function of a foreman, I feel like quoting a passage from a talk by Meyer Bloomfield to the foreman of the International

Harvester Company. He said: "Isn't it your business to make your men earn more money, to make them more productive so they can be better off? Aren't you really partners of the men? If you think you are anything else you are wasting a great opportunity. You *are* a partner of the men. That is why you are called foremen. You are not slave drivers; you are educators, you are doing work of instruction all the time. Make those instructions better analyzed, better recorded, and see what happens between you and your men. Gentlemen, you are educators and I want to appeal to you on the ground that no man is a manager who is not at the same time a good teacher and an example."

Other foreman's functions on the side of human engineering are:

- (e) Helping the men to play safe, to save, to earn more, to do better work.
- (f) Ironing out difficulties, disagreements or frictions before they have grown serious.
- (g) Furnishing an example of clean living, thrift, cheerfulness, confidence, square dealing, loyalty, and lastly — a very important one in my mind:

(h) Correcting fallacious notions of economics.

Now I want to say a word about the qualities that are needed for good foremanship, if a foreman is to perform these two functions satisfactorily. Under the administrative side we have the following:

(a) Mechanical ingenuity and technical experience. Those are two qualities very much needed; no foreman can command the respect of his men who doesn't understand the mechanical operations of his department through actual experience.

(b) Then there is the quality of *Concentration* on the administrative side, the ability to study out a problem, to get to the bottom of it, and to stick to it until it is finished.

(c) Then you have the quality of *Thoroughness*, the habit of doing a job so that there are no loose ends left.

(d) The quality of *Observation* comes next — noticing things around you. Now that doesn't mean the ability to notice *everything* that goes on, because that is futile. Ninety-nine things go on that are perfectly inconsequential, but it is the ability to notice the *hundredth* thing that is wrong which makes a man a good foreman. He isn't to be credited with an unusual faculty of observation if he merely notices that there are four lights in the chandelier, but he is when he notices that one light is out.

The final quality under administrative functions would be:

(e) A broad knowledge of production methods developed through contact with brainy men, reading literature on the subject, attending industrial discussions, and various other means. This broad knowledge is absolutely necessary for the modern foreman because he is engaged in working out problems that often don't come within the range of past experience. As an administrator of his department he is called upon to understand safety work and employment work and efficiency work, that has been developed almost entirely within the last four or five years, which his own experience couldn't possibly have brought him in contact with. He can understand those tendencies and movements only by constantly studying them and in this respect he is very much in the position of any other wide-awake executive who wants to keep pace with modern developments.

Under the second set of qualities, namely, the "group leadership" qualities might be included:

(a) *Physical Fitness*.—The foreman who isn't fairly robust, if not in stature at least in health, isn't radiating health to a sufficient degree to his men to furnish the right example, and besides he often loses time off the job. Good health—the radiation of good health—is a very important quality in any leader. Roosevelt had it in a marked degree; General Wood has it. You will find any man who is a keen leader of men radiates health whether he be undersized like E. H. Harriman, or a big chap like "Big Bill" Edwards.

(b) *Energy* is another quality for group leadership—showing signs of life throughout the day; showing initiative, courage and decisiveness. That is what energy is. It is like the thing Mr. Carnegie showed long ago when he was a young assistant to the superintendent on the Pennsylvania lines. The traffic suddenly got tied up through a wreck and a very serious condition was threatened. The superintendent was away. Young Carnegie simply waded in and got hold of the telegraph keys and issued instructions over that whole section of the road until detours were mapped out, the wreck cleared away and traffic restored. He was only a young fellow and it took a lot of courage and initiative and decisiveness to do it.

(c) The quality of *Judgment* is a very important asset to the foreman—the ability to choose the right man for the task and the right time to do it. It is the use of common sense in your dealings with men.

(d) Then there is *Sympathy*—trying to act the other fellow's point of view, the ability of putting yourself in the worker's place so you will appreciate his difficulties.

(e) *Fairness*.—You all know what fairness means to a group leader—playing no favorites and getting a reputation for deciding things on their merits instead of on the basis of personal prejudice.

(f) *Sincerity*.—If you promise a man a thing, see that he gets it. That is all sincerity is.

(g) *Loyalty*.—Now that is a hard thing to define, but it is indispensable. It doesn't consist merely in making no complaint against anything the management may propose; it does consist in never being a party to any knocking or seditious statements. My advice to a foreman would be never to let any advance information entrusted to you leak out. Carry out your company's policies earnestly instead of with a sneer. You have seen foremen, when asked to carry out a certain policy, curl their lip as much as to say: "Well, I'll do it but it is certainly a fool idea." Now loyalty doesn't command a man to refrain from all complaint or criticism, but it does demand that when a foreman has an honest complaint or criticism of a policy, that he go to headquarters and air it and come out with it honestly and clearly so that it can be answered, instead of talking it over disparagingly with the men. That to me is a good example of what loyalty to a concern means—constructive criticism given at the right time and in the right place.

(h) *Tact*.—Now tact is a hard thing to define exactly, but I should say it consists in governing your men at all times without giving offense in the use of your authority.

(i) *Self-control* follows, the final attribute of a good human engineer. Don't berate a man when in anger. As John McK. Bowman, a great hotel

manager in New York put it to one of his men one day, "John, I can't discuss this with you today, because I am mad at you." He wanted to wait until he had perfect control of his emotions.

Now the big question is, how to develop these qualities in foremen. On this point let us quote another item, this time from the report of the Committee on Executive Training at the Seventh Annual Convention, 1919, National Association of Corporation Schools.

"The foreman who has been promoted from the ranks without training can scarcely be expected to swing successfully the various tasks devolving upon him. Under the usual conditions he is the final production official to whom various specialists in the organization submit their orders and from whom they expect results. Foremen can not possess *without training* the specialized and technical knowledge required of them. Moreover, with respect to human relations, the foreman has by the very fact of advancement to his present position shown qualities which mark him as a 'company man' not alone to the superior who appointed him, but also to his former co-workers. Once the 'boss' of men formerly his equals, he is very apt to display a lack of sympathy, intolerance and suspicion which seriously handicaps his own efforts to make good and the company's efforts to cultivate employee good-will. The foreman untrained is, in short, likely not to be big enough for his job."

In other words, all of these qualities, both administrative and group leadership qualities, can be developed in the supervisory force through training. The methods of doing that will necessarily have to differ with different concerns. There have been several methods tried out on which I will touch just a moment.

First of all, there are the foremen's conferences. I suppose most concerns have regular conferences of their foremen where they get together informally and thresh out current questions, routine matters, company policy, and talk over different complaints and grievances, and that sort of thing. That is a very important method of linking up foremanship with general management and getting to the bottom of a good many questions.

Other companies have gone so far as to form foremen's clubs managed entirely by the foremen themselves. These clubs are organized not only to discuss policies, and to hear from the various department heads of the business so as to get a broader outlook on the company's affairs, but also for social and good-fellowship purposes and to hear occasionally from outsiders. Their programs are managed by a foremen's committee and the management itself usually has nothing to do with the conduct of the club's affairs.

The third method of attacking this problem of developing better foremen, is through intensive training courses that have for their object not so much the discussing of current questions that come up in the shop, but rather putting the foremen and assistant foremen through what you might call a real study course in management, including the handling of men, organization, costs, etc. They study this in a systematic way with well qualified instructors, special text books, special tests, etc. That has been done very successfully in a large number of concerns. I always feel that any concern that can work out such a training plan of its own is better off than to depend on outside standard courses. Unfortunately, we have not yet reached the point where many concerns are ready to institute an elaborate training system of

their own. Unless it is done right it is better left alone. There is nothing more pathetic than a half-hearted, inadequate attempt to develop a foreman's training course. Some concerns have it worked out very thoroughly. The Goodyear Tire and Rubber Company have developed their training so far that they are spending two and one-half million dollars this year on merely an educational plant consisting of class room, gymnasiums, etc. You can see the importance they attach to their training problem. They have developed a foreman's course which is doing excellent work: they graduated three hundred foremen last year, and four hundred and fifty this year. Their course consists, I think, of thirteen months' intensive training, the class meeting three times a week, for an hour during each working day. These men are being given a very excellent course in shop economics and administration, the broader basic subjects, rather than the technical subjects. They have their own local instructors and have well known lecturers from outside brought in.

I find that most of the concerns that work out a program of training for their foremen usually cover pretty much the same general field, although in the case of some concerns like Thomas A. Edison, Incorporated, they believe not so much in the training that brings together the foremen for mutual exchange of ideas, as in the personal tutoring of the foremen in the special subjects that he requires. He may be weak in mathematics, on blue print reading, or he may be weak in handwriting; he may be weak in any one of a number of things and the training department specializes on helping that individual foreman get the special training he requires. That, of course, is the ideal system, but it is just as impractical for general use as it would be for all of us to have private tutoring at school. Those that can afford it, those that badly need it, have to have special instruction, private tutoring, but for the mass of us we have to rely on common school education which is standardized and not particularly adapted to any one individual.

Now, I have merely a minute more and I want to mention what the United States Rubber Company has done. They are developing a special course for their foremen with an excellent man in charge who has quite a department working it out. They realized the need of foreman training two years ago, and realizing that it would take some time to work out their own plan and build up their own department, they employed our corporation to come in and give a course for foremen which was conducted two years in succession for over a thousand of their foremen, and was very successful. It put the men in a frame of mind to be receptive to the company's own specialized training. They have prepared the most effective plan of foremanship training of any company I know.

Bringing in the new era of industrial good will through the foreman, I would like to wind up this discussion with a few general points on this question of developing men in industry. To my mind the way has got to be paved, ladies and gentlemen, for two great movements looking to the greater stabilization and productivity of industry. First, we have got to provide some means for a larger degree of home ownership on the part of working people, and stock ownership by employees, in order to give them vested economic interests. People with a financial stake in a home or in a concern, don't move away lightly, and they don't become easy victims to fallacious economic ideas,

The second thing, it seems to me, we have got to do, is to work out a plan of participation in plant management through democratic representation of employees in order to give the employees the proper amount of self-respect. I don't have in mind changing the channels of authority and putting the control of industry in the hands of employees, and that sort of thing, but I do feel that employees want some of the fun of management; they want some of the responsibility for passing upon conditions under which they work.

Now the former — that is vested economic interest in industry by employees — involves the education of the employer in the advantages of some kind of profit sharing plan.

The second, namely, industrial democracy, involves the preliminary education of the working force to prepare them for the responsibilities of self-government. On that point our friend, Dudley A. Kennedy, had this to say at a recent industrial conference:

"I want to stress one point; In these decisions we are apt to be neglectful of a great many people in our plants who are not ready for the responsibilities of democracy and should be made so."

That thought is shared by a great many sensible people, ladies and gentlemen, that industry isn't ready yet for any extensive plan of democratic control, largely because of insufficient basic education. The process of industrial education must go on simultaneously in the public school, in the office, and in the shop. But before the shop is ready to absorb it, the men who supervise the work of others must be trained in the art of human engineering. Let us begin with the foremen. They are in need of help. They are eager to measure up to their new duties. They depend upon you specialists in industrial relations to show them the way.

MR. CAMERON: I am sure we were all very much interested in the attractive picture of "The Modern Foreman."

I will ask Mr. Stephenson to lead the discussion of the paper.

DISCUSSION

By H. STEPHENSON, EASTMAN KODAK COMPANY

Ladies and Gentlemen: Mr. Nussbaum touched on one point that we have found of considerable importance, and that is the question of the foreman properly understanding the duties of a staff organization. Our work was developed in a much maligned and much hated efficiency system and we have found that it was altogether due to a misunderstanding and a lack of co-operation that we have had any trouble at all in starting or changing or making any improvement.

After we have been in a department and have performed a certain amount of preliminary work, we have had no particular trouble, but up to that time we find that there is considerable difficulty in getting the foreman first, to co-operate, and second, to realize that after he has co-operated his responsibilities have not ceased.

A staff organization is simply this: To help the foreman to perform parts of his work; to take away from him some of his routine duties and that applies to the cost department and the employment department, and the efficiency or rating department and several other of the functionalized branches of organization and management today.

The great trouble we have experienced has been a feeling on the foreman's part that after he has surrendered some of his privileges and prerogatives he is through with that side of the work. From that point on he feels that he has no more responsibility, that has been taken on by the staff organization. It would be a wonderful thing if this work could be done, if the foreman could be taught and trained ahead of time to the uses of the staff organization.

Another feature that is of immense importance is the human engineering part of it. Mr. Nussbaum has mentioned that. The foreman is in a position that nobody else in the organization is in to get things across, to get them direct to the workers. You can put across a great many policies by proper handling that could not be possibly put across in any other way. It is direct personal confidence in the foreman, not in the management (which is usually too distant), but the foreman direct, which enables you to change systems and put in new methods and in general reorganize or get across new methods of operation.

MR. CAMERON: If there are no questions we will proceed to the next subject—"How the Foreman Can Win His Men to Safety," by Mr. Frank Morris.

HOW THE FOREMAN CAN WIN HIS MEN TO SAFETY

BY F. F. MORRIS, REGIONAL FIELD SECRETARY, NATIONAL SAFETY COUNCIL,
CHICAGO

Mr. Chairman, Ladies and Gentlemen: We have just listened to a very excellent paper on "The Modern Foreman," and I wonder if some of you men were not thinking as I was thinking, of the old time foreman—you know the kind I mean, the old bully ragger who comes tearing down through the shop like a mad bull, barking out his orders as if he were driving a bunch of cattle, every sentence punctuated with profanity. I wonder if you fellows have worked for men like that? When the general superintendent would come in, this fellow would get down on his hands and knees, literally, and lick his boots, like the fawning pup that he was.

But, thank God, the day of that kind of foremen is past. For most of us who had to serve time under that sort of a fellow, the memory of them is only a nightmare.

In this Safety Week, today is "The Foreman's Day." I think the program committee did wisely in putting "The Foreman's Day" today, ahead of "The Safety Man's Day," which comes tomorrow, because if I were to choose between the two, a safe foreman and no safety man, or a safety man without the co-operation of the foreman, I'd choose the safe foreman every time. With a safe foreman and no organized, highly organized, safety department you can do some good; but with a highly organized safety department and without the co-operation of the foreman you might as well throw your money in the creek and see it splash. It will do you more good. You can't do a thing without the co-operation of the foreman, and I see the audience is made up mostly, this morning, of foremen. I have met quite a few of you men on the job, in your plants on previous occasions, and I want to say to the rest of the audience that if I get a little bit familiar and start to say you and me, I hope you will forgive me because when I see foremen in the audience I want

to talk to the foremen because I used to be a foreman a good many years ago, in the steel industry. What I have to say is gotten from practical experience and not from reading it out of a book.

The attitude of the workman in the plant toward this safety proposition depends absolutely on the attitude of the foreman. Now why is this? There are two principal reasons, I think one is that we love to imitate. Nearly everything that we do, we do like we have seen some one else do it. We don't realize that always, but we are great imitators and if we have something new to do we try to think how we have seen some one else do that thing, and then we do it that way. When I was a lad my father bought me a box of puzzles, these iron things you know, that you have to put together and take apart. That box of puzzles had a book of directions, I read that book forwards and backwards but I couldn't do those tricks. When my father came home and showed me how to do it, it was absurdly simple. We learn much easier by watching than by reading about it. So I think the men in the shop, when they have a new thing to do, they do it like the foreman and if the foreman is a safe foreman and works in a careful way, that is the way his men are going to imitate him.

Then too, there exists in every one of us a sort of hero worship. I remember when I was a boy I greatly admired the village barber. Why? Because he had the reputation in our small town of being able to stand up to the bar and drink more liquor than any other man in town. I made up my mind that when the time was right, and the opportunity presented itself, I was going to try and see if I couldn't beat his record. Well, I never got around to it and I suppose now the chance is hopelessly gone.

A sort of hero worship. We don't care particularly what a man excels in, we admire him because he excels. I was buying a newspaper on the street in Detroit not very long ago, when a great big, broad shouldered man passed me. The newsboy said, "You know who that guy is? That guy's Heston, the Michigan football player." Hero worship. I saw it in the back of this hall yesterday afternoon. Two men came in together and sat near me and after one of the speakers was well under way, one of these men got up and tiptoed out. The other man said in a large stage whisper, "You know who that fellow is? That's so and so, the old prize fighter." And to my shame, be it said, I stopped listening to the safety lecture and watched the man go out the door. Hero worship.

And that, I think, ladies and gentlemen, is why the foreman is a leader in this safety work, because if it is a new idea to the men they are going to do like they have seen him do it because it is easy to imitate. Then there is that hero worship; they respect him because he has fought his way up through the ranks and he is now at the top. He is a real foreman out there in the fore, and they look to him for leadership.

The foreman must get the confidence of his men by taking an interest in their welfare. I am reading the program and I don't quite like that sentence, "The foreman must get the confidence of his men by taking an interest in their welfare." Now let me give you foremen in the audience a tip. Don't go home and go out in the shop to-morrow and start taking an interest in the welfare of your men so you can put this safety idea across, because you won't get anywhere with it. You must take an interest in your men because

they are human beings. Don't forget, foremen, that you owe your job to those fellows who are working for you, because if nobody would work for you you wouldn't have a job, you wouldn't be a foreman. When you go back to the plant to-morrow, just think of that, every man from your assistant down to the janitor you owe something to and take an interest in him for that reason.

The modern foreman comes into the shop in the morning quite differently from the ancient foreman I referred to a while ago. He goes up to a man working on a lathe and says, "Hello, Charley, how's the wife this morning? That's fine. And how's the new baby?" Then he goes on a little farther, "Hello John, you big walrus, where are those two rabbits you were going to bring me? You're a fine hunter, you are." And, on his way into the office he stops and speaks to old George Jones running the big plane by the office door and he says to him, "George, has your dog come back yet?" He takes an interest in those men—old George has lost his dog and the boss knows how much the dog means to old George. When that kind of a foreman comes out to the men and talks safety to them, they listen to him because they have got confidence in him.

The modern foreman must understand the fundamentals of safety. He knows that there is a projecting screw on the line shaft, it may have escaped the vigilant eye of the factory inspector, but he knows it is there and he knows that the chances are that some day the oiler is going to get wrapped up on the shaft unless a safety set screw is put in there. When he goes through the shop and see a drop of oil on the floor he knows where it comes from, he doesn't have to look to see that a drip pan has worked loose and that the oil is dripping on the floor. He knows that if that is allowed to continue that a pool will accumulate there and possibly a truck driver will slip on that pool of oil and break a couple of ribs. He calls the janitor and sand is put down, and the repair man is called and the drip pan fixed.

He must understand the principles, fundamental, of safety, and as a foreman he must be foresighted and see the accident before it happens. The foreman must instruct his men in a kind and sympathetic manner. I can imagine a new man coming into the job where the modern foreman is working. The man comes over from the employment department; the place is strange to him and he feels that he is in the midst of strangers. He goes into the foreman's office and the foreman says, "Well, I'll take you over and show you where the locker room is." On the way to the locker room he is engaging him in conversation, he shows him where the washroom is, and the first thing you know he has his history. He knows that the new man has just moved to town; has a family; got a house—"Got a house? Well, you're a lucky dog. Didn't know there was one in town. Got a garden?" and so on. Then he takes this new man over to the machine, we will say a drill press, and starts him out to work drilling some small castings. He calls his attention to the fact that he better take his necktie off because it is liable to get wound up; and his jumper sleeves are a little loose, and he better roll them back. By that time the new man is ready to listen to him because the boss has been a friend to him. This man in his work may feel that all the rest of the men in the shop are strangers to him but he knows he has one friend there—the foreman.

The foreman must see that proper safeguards are provided. Now I can't talk too much about proper safeguards because the speaker who is to follow me, Mr. Cole, has the subject of safeguards and the Program Committee have written this so we can't spill on to another man's territory. But, I would like to say what is a proper safeguard.

Supposing a foreman is on his way back to his office and George Jones is working—same fellow who lost his dog—the foreman notices that the connection between the motor and the planer is whirling around at a great rate and isn't covered up. "George, did you ever stumble when you were working around this machine?"

George thinks a moment. "Yes, I remember I did once."

"Suppose you should stumble and you put your arm on that coupling by the floor, you might get hurt pretty bad."

"Yes, boss, I believe you are right. I think that ought to be covered up."

"Well, that is electrician stuff. You call the electrician and see if you two fellows can't figure a guard for that."

So, the electrician comes down and the first thing you know they have a sheet metal guard covering that coupling. It is a guard that will guard. It will always be there because the electrician who made it, planned it. He didn't design it, he thought it was a product of his own brain. As a matter of fact it was the same kind the foreman had in mind and he merely suggested to these fellows what kind of a guard to put on. That is what I would call a proper safeguard. The proper man will also have his eye open to see that proper safeguards are provided.

Disciplining without antagonizing. Now we come to a part of the subject that has to be handled with gloves—discipline. Supposing you are with a foreman and on a certain day you hire two men to do the same identical kind of work. Now one of these men is naturally careful, always has been careful, never takes a chance. The other fellow is one of the most careless fellows you ever saw and if you have seen him work a while you make up your mind he must have been born in a buggy during a runaway, he takes so many chances. What are you going to do with that careless man? Are you going to fire him? That won't do, he would only go over to some other plant. It is your business to educate that man and make a careful man of him. I don't believe there is a man anywhere that can't be converted to the safety first idea.

But, you have a talk with this careless fellow, a very earnest talk, and he says, "Yes, I know you're right and I'll try my best." And he does try, he works hard at the job of being careful. All right, now you come into the shop some day, these two fellows each doing the same careless thing. Now for the man that is naturally careful and to the man who is naturally careless it isn't a very big offense. What are you going to do, give them two weeks off? Discipline them both? Discipline must be tempered with justice, one might be a bachelor, no responsibilities and no cares, the other might be a family man with a whole "passel" of children; paying for a home, what are you going to do, give them both the same discipline?

I would like to relate in just a short moment an example of discipline that strikes me as being very practical. In a small town in Ohio, a rolling mill town, there came to work one day in the rolling mill, a man who was half

shot—as we say—quite under the influence of liquor. He had just gotten his clothes changed when one of the safety committee reported that Charley Steele was drunk. The superintendent went out into the shops, went up to him and said, “Charley, you look awful sick, you better go home and rest up.” So, Steele went home. When he came back to work the next morning he was told that the boss would like to see him for just a moment, so Steele went into the superintendent’s office. The superintendent was sitting at his desk. When Steele came in he said, “Steele, I am going to make you the superintendent of this plant for a few minutes. Now sit down in my chair.” Steele sat down in his chair. Mr. Monroe, the boss, went out and closed the door—opened it, came in and said, “Good morning, Mr. Superintendent. I came to work yesterday half drunk. I didn’t realize that I might hurt myself, that I might endanger the other workmen, and I knew you ought to do something to me. Now what are you going to do?”

Well, Steele thought pretty hard for a few minutes and he looked up. Now the boss knew that this fellow had had many a fight with Old John Barleycorn and he had been licked every time. By the way, you know John Barleycorn’s middle name? Did you ever hear it? Carelessness—John Carelessness Barleycorn, and as a safety man I thank God we have tied the can to him.

Let me tell you what he told the boss—that he ought to have thirty days. But, the boss knew he couldn’t afford to take thirty days off, so he said, “Charley, I am going to do better by you, two weeks. At the end of two weeks come back and see me.”

Would you like to hear the end of that story? That happened three years ago and Charley Steele has not touched a drop of liquor since, and he is one of the best safety men to-day in that plant. That, gentlemen, is practical discipline.

The workmen should be commended for their efforts, is the last part of this subject, not only in safety work but for any other kind of work. My little seven-year-old boy came home from school the other day and he showed me a spelling lesson and across the top the teacher had written, “100.” I said, “Jack, I’m proud of you.” The little shaver stuck out his chest and I thought he was going to burst open with pride—commendation.

Not very long ago I stopped off between trains in a little town in Michigan to see my old grandfather, ninety-six years old. Every day, according to the doctor’s orders, he takes a walk down to the corner and back, a half a block. On this day I walked down there with him, I said, “Why Grandad, you walk just as good as you did twenty-five years ago.” You know what happened? The old man tried to walk down town next day and pretty nearly killed himself.

Commendation, desire for praise is born with us and it never leaves us. But, Mr. Foreman, don’t commend your men for their safety work in front of the whole gang. Don’t pick out any individual and say, “There is a good safe man, watch him.” You are going to discourage the rest of the fellows, they are going to get jealous. As one man so well put it—before you were married, when you were going with four or five different girls, you didn’t get them all together in a single room and tell them how much you loved them.

And now that reminds me, you think you have a careless man in your gang that can’t be converted; he is one of these hard nuts, you call him “Dumb.”

But how hard have you worked with that fellow, have you really tried? Speaking about your sweethearts; I wonder if you remember the bag of tricks you pulled on your sweetheart's brother—tried to get close to him and make him think you were a good fellow, there wasn't a thing left undone, was there? Let me suggest this: Try the same stunts on your careless man and you will win him over.

DISCUSSION

MR. CAMERON: The discussion of this topic will be opened by Mr. H. F. Doepke of the National Aniline and Chemical Company of Buffalo.

MR. H. F. DOEPKE: Mr. Chairman, Ladies and Gentlemen: I wish I was one of those heroes that Mr. Morris mentioned in the early part of his paper, because it takes a hero to discuss a paper so well prepared and containing the truths that Mr. Morris has made known.

I have not volunteered for this; the gentleman who conscripted me to lead the discussion on Mr. Morris' paper has shown a keen sense of humor. He knew that whatever I had to say would be said with an accent. I have learned from experience that a foreign accent is amusing to some and an irritation, a source of discomfort, to others. However, both listeners will see their expectations materialized.

What Mr. Morris has said about the qualities of the foreman is so true that it is a hardship to enlarge upon it. Mr. Morris in his capacity as Regional Field Secretary of the National Safety Council is an expert on the point under discussion. His opinion is in a way, the consensus of opinion which he has absorbed in his activities as Field Secretary, and lastly it is the opinion of the great clearing-house on safety matters of the National Safety Council.

I cannot help but agree with many phases of Mr. Morris' paper. At the same time I am glad to have the opportunity to enlarge upon his contention that the foreman is a very important factor in the industries, and especially in the branch of industry which deals with the safety of the working man. As Mr. Morris has said, safety is inherent in every man. Now safety has been carried on since the early days of mankind, prompted by parent love, by the instincts of self-preservation, by disasters that have befallen individuals and communities, but, due to the rapid advance of civilization and predominance of industry there has been created that which in turn has made it necessary that safety education be made compulsory and systematic.

Here is where the important factor in the game, the foreman, is vitally a factor because he is a leader of his men. The word leadership has often been expounded, and I should say he is a real leader. The men look to him for instruction, and for the entire presentation of the hazards which are embodied in this work. I don't care at how many safety congresses this subject has been discussed by safety engineers and by their apostles, there isn't an ounce of value in all the rules and theories by safety engineers laid down by the State Labor Department and insurance companies unless the most vital factor in the game, the foreman, is a man who carries out these rules. Not because the safety engineer or the manager wants him to do so, but because he has a good will and this good will comes from the bottom of his heart.

You want to know my ideal of a foreman, whom I could call a real executive, who inspires safety and who inspires confidence in the men whom he is supposed to lead? In order to answer this self-inflicted question, I will have to tell you my conception of a real executive. To my mind a real executive is a man who has the happy faculty of adding responsibility to his burden without disturbing his equilibrium. Therefore, the foreman to my liking, is a man who can think for others as for himself; who considers the safety and welfare of the industrial workers just as important as the quantity and quality of production. The foreman who has my profound admiration is a foreman who realizes that there is specialized education always preceding achievement; that he is acquiring all the knowledge necessary for the safe operation of his department, and then drills it into the minds of his workers; and all of this, not because the manager wants him to do that, but just because he sees it is his duty to the subordinates as well as to his country to teach the gospel of safety. The foremen of this type are not following the rules laid down hard and fast, by safety engineers or by the managers, but they inspire him because they have accepted the gospel of safety.

When I talk about a gospel one can't help but think of the Eternal Book, the Bible, and I want to make a quotation which has been found in Deuteronomy, Chapter XXII, Verse 8 : "When thou buildest a new house, then thou shalt make a battlement for thy roof, that thou bring not blood upon thine house, if any man fall from thence."

The Industrial Commission of the State of New York, which is always eager for pointers, have interpreted this rule, or quotation rather, and you will find in Rule 881: "If more than six feet from the floor level, there shall be standard platforms provided for"—by the way, this proves that the Industrial Commission isn't quite as original as their excellent Code might indicate.

When I was a boy there were two classes of men who always had my profound admiration. One of them was a physician, because he is taking care of the life and health of those that are dear to us and ourselves; the other one was a soldier, because he is ready at any time to give his life, if necessary, for the protection of our homes, our lives, and our country. Since I have entered the profession of safety engineer, I have added one more man to the list of my stars, and this is the foreman, because the foreman, ladies and gentlemen, is a man of national importance. The foreman in the industries is the sergeant-at-arms who is interpreting the requirements and the commands of the captains of industry to the industrial soldiers. Upon the way he fills his position as sergeant-at-arms and interpreter depends the success of the captains of industry as well as the industrial workers; and upon the degree he gains the confidence of the workers depends the safety of the workers as well as of a nation.

It is hardly necessary to mention that the success of certain of his efforts, and the good will that comes from the heart to do all he can in his power for the safety of his men is the keynote of his success as a foreman as well as a safety man, which he should be as a foreman. When he is conscious of possessing those qualifications, he may safely go ahead and try to wrest from his men the habit of chance-taking, to make them see and adopt safe methods of handling materials and operating machines, and, lastly, drill into their minds the responsibilities which are theirs; the responsibility to do unto

others as he, the foreman, has done. Undertaking safety prevention work in your department can't help but make it successful in your efforts to bring the men to safety.

Having been drafted to discuss Mr. Morris' paper, and having mentioned to you before that I speak with an accent, I can not help but think I have introduced to you a foreign element, and I consider this the psychological moment to make a reference to the foreign workers who are now within our boundaries; who operate our mines; who build our highways; who do the labor which, however honorable, isn't light and is not performed by American workmen. This class of workers is the foreign labor, and the question arises, what kind of leadership is necessary to win foreign labor, the foreign-speaking men, the foreign-acting men, the men with foreign ideas, to win them to safety? Gentlemen, upon the attitude of this foreign class of workers depends the safety of a nation, to a large extent. We are all secure in our conviction that, even with a complete solidarity of the foreign element, there is no possibility that they could destroy or come near destroying our social and industrial life. At the same time we all admit that the foreign element plays an important part. One is apt to underestimate their importance, because their strength, their loyalty, and their tendencies can not be tested at the election booth.

The question of Americanization work is carried on throughout the States to a great extent. The question is whether what is done to-day in Americanization work will really Americanize these men? I wonder whether any of you have ever honestly tried to analyze and understand the heart and mind of the foreigner. Ladies and gentlemen, I know, because I was a stranger myself. Twelve years ago I drank my first cup of American hospitality and that impression of the first cup is one never to be forgotten. The entrance into the beautiful harbor of New York, beautiful skyline of the City of New York, bathed in sunshine; a lenient examination by kind officers, and lastly my first meal at the table of hospitable strangers. To-day, I am a United States citizen and am proud of my achievements as such.

If there is any man or woman in this audience who labors under the mistaken idea that a naturalized citizen can not be a hundred per cent citizen, I want to tell you, ladies and gentlemen, that he can. I am just as loyal as you are, hundred per cent, and why? Because I am a citizen by conviction and by my own choice. I have not merely been born accidentally in the United States. It is strictly conviction.

I want to tell you one more thing, I don't deny that there are strong ties of love and admiration which forever will claim my affection for the soil that has borne me; for the parents who have guided me; for my home; for the schoolhouse for the loves, the fears, the follies—those impressions are everlasting, and I think that no man, no matter where his loyalty is, should ever forget them or try to forget them. In spite of that fact, I am loyal to the Constitution of the United States.

You may wonder what all this has to do with the program. Just this, ladies and gentlemen, that my heart and mind isn't any different from the hearts and minds of the foreigners now in our country. My success in Americanization is chiefly due to the stimulating effect of the kind and encouraging attitude on the part of the men for whom I worked and under

whom I worked for my daily bread. And here, my friends, I think here is a wonderful thing for you to do, a patriotic duty to your country. Just what constitutes that duty needs no explanation, it is self-explanatory.

GENERAL DISCUSSION

MR. CAMERON: Now, it is your turn. This program was designed to permit you to take part in this discussion. I have never attended a safety meeting yet in which there wasn't a good many questions of the speakers. These men are experts in their subjects. Who is going to ask the first question of Mr. Morris on this subject?

MR. L. B. WYCKOFF, Union Carbide Company, Niagara Falls: I am very much interested in this discussion Mr. Doepeke has brought up about the foreign element. We have to do with a great many foreigners, Italians, Polacks, Armenians, Bulgarians, and all kinds. We have to deal with men who don't know but one or two words; they know coal, they know rock, they might know iron. We have got to deal with men who only know a few words like that, men who get one idea. You can teach them one thing and a few weeks later you try to teach them something new, it is days before it can be done. I would like to hear from the speaker how we can go about it to get a better co-operation from such men where they can't understand what you are talking about.

MR. MORRIS: Let me ask you this, Mr. Wyckoff, do they have a foreman who can speak English?

MR. WYCKOFF: In some cases the foreman can speak English and one other language. We have at all times in the plant interpreters to whom we can take questions when we really have some important questions. We have safety meetings two or three times a month for every man in the plant. At these safety meetings some of our foremen make addresses and short talks and an interpreter probably reproduces them in one language, probably Italian. But, the one man who is a Spaniard doesn't understand; the question is, how to reach the one man.

MR. MORRIS: I remember giving a safety talk in a shop one time when I had a Greek on one side and a Roumanian on the other. I would say something about safety, then the Greek would talk, then the Roumanian would talk to his fellows. He hadn't gone very far before a grimy looking individual out in the crowd held up his hand and said, "Mr. Boss, you speak English, we catch 'em."

I don't know, Mr. Wyckoff, what I would do in your case to reach those men. You are referring to safety work, aren't you? You mean you can't reach them with a safety idea?

MR. WYCKOFF: Yes.

MR. MORRIS: Well, I believe it can be done through the safety committee plan. Do you have that plan? Do you have a safety committee among your foreign workers?

MR. WYCKOFF: Yes, we have a safety committee.

MR. MORRIS: Do you have in any one department, in your shipping department, say, fifty Roumanians working, do you have in that department as a safety committee of that department, certain men recognized as safety men among their fellow workers to whom you can go and say, "Pass this word along to these other fellows?" Have you tried that scheme? I don't want to talk much about that because it is coming up this afternoon, but wouldn't it answer your problem?

MR. WYCKOFF: We have used interpreters and worked it out that way.

MR. MORRIS: I think if, instead of working it through interpreters, you put it right up to a man's fellow workman, "You look out for my safety, and I watch out for yours"—it is the personal touch that gets the idea across in this safety business, I believe. I never saw any gang of foreign-born workmen anywhere that couldn't be made into Al safety men when they were approached from the right angle, but you have got to know the angle. You have got to know how to approach these people, as we heard so well stated yesterday afternoon.

I have had gangs of foreign-born workmen working for me and I respect every one of them. I have gone down into their homes, sat with them at their table and eaten the kind of food they cooked over in the old country—it didn't always go well with me, but I got away with it. But I am for the foreign-born workman. As Mr. Doepke said, he came here because he wanted to, he wasn't born in this country by accident. He might have gone a little farther and said that you came here naked and he came here with his pants on.

Are there any other questions to be asked gentlemen? I don't pose here as one who could answer any question that might be asked, but if you ask a question may be there is somebody in the hall that can answer it for you.

DR. P. H. HOURIGAN, Larkin Company, Buffalo: I take it that your safety measures are ultimately for the purpose of saving human life and human limb. We doctors in industry have a problem of putting over preventive measures. Now we have observed when a man is so sick that he is going to die he will pay all the money he has got to save his life. But what can we do to get him to take up preventive measures along the safety line, along the matter of minor infection, or preventive health measures?

MR. MORRIS: I presume one of the hardest problems that the plant physician has to deal with is minor infections. Is that right, doctor?

DR. HOURIGAN: Yes.

MR. MORRIS: We get a little scratch and we say, "Oh, that is nothing." And yet, the first thing we know our finger is swollen and at last we have got to go to the plant physician and get fixed up. I could tell you of a man who was brushing off his clothes and caught his finger on the buckle on his overalls. He didn't go to the plant hospital and in two weeks his wife was a widow.

I could tell you of a man who worked in an office, right above the plant hospital, and in turning over the big leaves on a ledger he caught his finger on one of the little metal tabs on the top of the sheet and got a slight scratch. That was nothing, he didn't even take the trouble to put some iodine on it.

As a result, in ten days he was in a hospital with his arm in an oven, and he stayed there for some time. After the hospital discharged him, I told them I wanted him sent down to my office. He came down—I was the safety man in that plant—and I told him, "If you white collared fellows don't set an example for the rest of us, how do you expect us to get this message across to the men in the plant? I am going to make an example of you, I am going to take your picture, and I am going to paste it all over the plant—'Here is a white collared man who neglected a scratch. It cost him so many weeks' time.'" Well, you know I started to draw his picture—I don't draw at all, but I bluffed it through. He said, Don't do that, I will be the laughing stock of the plant."

I didn't do it, of course, I couldn't do it. I let him off with a promise that he would never be guilty of such an offense again. What happened? It just so happened, men and women, that this fellow didn't have any resistant powers for those streptococcus germs,—or whatever you call them; they certainly do raise the dickens when they get inside. He didn't have any resistance and he didn't need to any more than puncture his finger. Now, you would think after his previous experience he would have that taken care of, but in less than ten days from that time he was in the hospital again with his arm in the oven.

You know, the safety man always thinks he has got something on the plant doctor. He goes around and claims how much more important he is than the plant surgeon or physician, because he says how much more important it is to keep a man from getting hurt than to fix him up after he is hurt.

MR. HEMPSTEAD, DuPont Fabrikoid Company, Newburgh: We have no doctor at our plant because it is within the city of Newburgh, and because we can get an ambulance or a hearse in five minutes, so we don't feel we need it.

Our company is only one of forty-nine branches of the DuPont Company, and our rules are rules that are drawn up by our central organization in Wilmington. We have very strict rules in regard to scratches and that is, if the skin is broken at all a man must put iodine on it. It is up to the foreman to see that it is done. We depend on our foreman, as every plant must do for most things, and I have known of one case where a man had a scratch on his hand. He didn't take care of it, his foreman noticed it and said, "John, you better get that fixed up." We have a change house with a first aid kit. The next day he noticed the man had no iodine on his scratch so he said, "John, I think you better take a week off and when you come back your hand will be all right."

MR. MORRIS: The foreman noticed that the man didn't have any iodine on his finger and laid him off for a week?

MR. HEMPSTEAD: Yes, the second day. That is the only time I have known it to be done, but it is remembered by a great many.

MR. MORRIS: In your plant your foreman is a sort of a first aid man?

MR. HEMPSTEAD: It is a rather small plant, only eight hundred employees, and we depend on the foreman for a great many things that are taken care of in larger plants by certain organizations.

MR. CAMERON: Any other experiences?

MR. E. R. COLE, Acheson Graphite Company, Niagara Falls: I want to commend Mr. Morris—he said when you do good work you ought to be commended for it, and I want to start there.

This thing he has brought up this morning, the matter of the foreman is important. It has been said the foreman is the keynote, he is the noncommissioned officer who carries the thing through. Then some of us get up and ask questions about foreign labor. We are talking about the foreman and most of the men have made an outline of the work and that is all there is to it. I think some of them are going to act on that thing; I tell you, if you are going to go home and act on it as it has been outlined (and if this war has never done anything else it has made every one of us a thinking person), you will get results. Yesterday, in the address that was given last, there was given in detail about a man's son who went into two or three battles over there and he gave the percentage of his company that were foreign-born Americans, and he gave their records also. The only way they were able to do those things and hit that Hindenburg line was due to the fact they intensified on this thing; they trained and practiced back of the lines before they went in.

Now, this thing we are going to take, this proposition as it was outlined this morning, if we are going to take it and leave it in our notebooks we won't get any place. We must believe that the foreman is *the* man, as has been said this morning. Go home believing that and teach that foreman that he is human, that he must assume every one else is human also.

The answer to this matter, whether it is foreign labor or not is, "Give it to us in English, we get 'em." Even if there are thirteen nationalities there, they are all getting the idea. I think, gentlemen, the testimony of all the commanders across the sea has been that the American soldier wanted to know what he was going to do, and he was anxious to be told, but when he was told and understood it he went through the Hindenburg line, or any place else he wanted to, with a smile.

MR. H. S. W. HARDWICK, Norton Company, Niagara Falls: I notice the experience of the Larkin Company, and I would like to cite the experience we have had in the small plant at Niagara.

There we have the thing divided up into shop work, each foreman responsible for the men on his shift regarding accidents and all other work. Our first aid treatment is a very simple affair, merely consisting in washing the wound with gasoline and applying iodine. Although we have a large number of accidents, counting the trivial accidents—every trivial accident must be reported and it naturally makes a large list at the end of the year—we only had three cases of infection and those cases were all caught in three days.

So, it is up to your foreman, regardless of your medical staff or your safety staff. The actual work of catching those small accidents and stopping the infection rests entirely with the foreman.

MR. MORRIS: I think that is a very good point, very well brought out, the responsibility for accident prevention work is absolutely up to the foreman. You can't pass the buck to the safety department because their business is not to prevent accidents in your department, their business is to help you

prevent accidents in your department. The foreman is hired to do certain work, but the safety of his men is more important than that work.

MR. F. A. WILLIAMS, Standard Accident Insurance Company: In regard to the employees, there have been a great many occasions, especially in press work, throughout the State, where the different employees have not known what kind of a guard should be placed around punch presses at the point of operation. A good many times they go to the foreman of the plant and they don't know what kind of guard can be made.

Even though you educate the foreman, if he doesn't accept your press punch guards and things of that kind, you don't get the benefit from your work that is put through in the plant.

MR. MORRIS: The gentleman makes the point that you can't force a guard on the foreman unless he approves of it. I think we all agree to that.

MR. LITTLE: Our next address is, "What every foreman should know about safeguarding," by Mr. A. B. Cole.

WHAT EVERY FOREMAN SHOULD KNOW ABOUT SAFEGUARDING
BY A. B. COLE, MANAGER, BUREAU OF SAFETY, UTICA MUTUAL INSURANCE
COMPANY, UTICA

Every effort that requires a great collective response to establish its success must be conducted through and by means of a complete and efficient organization, and its motive power must be enthusiasm.

The foreman is an essential member of a productive structure created by necessity and through the lessons of experience—he is the medium through and by whom creative thought is developed into reality. Without him no industry can achieve success, nor more than combatant forces can secure victory without lieutenants.

What the foreman knows, not alone of safeguarding, but of safe practices and the depth of his sincerity determines, to a large degree, the success of the safety movement in any given industry. His attitude and knowledge finds a reflection in the receptiveness of the men.

A complete comprehension of the requirements of an efficient safeguard must be founded primarily on a clear conception of the hazards which the guard is designed to eliminate; and a realization of the abnormality of the structure of the human body, which in itself offers opportunities for accident, as well as the possibility of failure of the mind and brain to properly function.

Guards are required to prevent accidents arising out of structural and mechanical conditions, and the peculiarities of material and processes. To be efficient, they must prevent all accidents to all who may possibly come within the zone of danger. Not only must those hazards encountered in the usual course of work be eliminated, but also those made probable by an unusual and unanticipated act or deed.

Many enthusiastic workmen will take upon themselves responsibilities not properly their own, which will bring them into unfamiliar fields of danger and this possibility must be recognized. The fact that a workman had no business to approach a point of danger, or that only one or a very limited number are subject to the hazard at rare intervals, is no excuse for failure to guard, nor for negligence in permitting existing guards to become misplaced.

The term "fool-proof" has been used in denoting the degree of hazard elimination. The term seems to indict the workmen with subnormal mentality. Personally, I would rather call it "ignorance-proof"—thereby charging those upon whom is placed responsibility for the safety of the men with failure in the discharge of this responsibility. We do not know until we have been caught.

Guards should be so designed as to prevent the approach of any part of the body to a position where injury may be caused—in other words—so constructed that a hand or any part of the body cannot project over, underneath, around or through to a point of danger. Such a requirement has, of course, the limitation of practicability and common sense.

The governing factors in length and breadth of those parts of the body that may approach a point of danger must be understood. The possibility of fingers projecting through a guard is eliminated by a mesh such as to reject a ball one-half inch in diameter, when the guard is four inches or less from the moving part. Similarly the forearm length is assumed as fifteen inches and from four inches up to that distance the mesh must reject a two-inch ball. The height of these guards should be at least six feet, or to cover any condition less than six feet except inclined belts or shafts where the guard should be of such height that a vertical line through the upper edge of the guard on the under side of the belt will intersect the belt six feet six inches from the floor.

At a distance of fifteen and not to exceed twenty inches, a standard rail forty-two inches high is generally sufficient.

The guard should be securely fastened in place preferably to the machine and always so built that there may be no interference with cleaning the floor.

Facilities for easy access to the parts inclosed for the purpose of oiling and cleaning should be provided and such doors or panels should be hinged to the structure or frame of the guard, and further provided with coil springs all for the purpose of preventing entire removal and carelessness in leaving them open. I personally advocate coil springs for the purpose of closing this swinging door. I had a case come to my attention. The accident was not caused by any condition but the question was important. I happened to be able to reach the place thirty minutes after the accident occurred, and the thing which attracted my attention most forcibly was that underneath the head stock there seemed to be quite a quantity of gears, perhaps best characterized by saying, upwards of half a bushel—all sizes, degrees and denominations. Access to these various bunches of gears was through the removal of a panel, the casing of that panel was very nearly the size of this section of the desk. It was over on the edge of the machine; it was supposed to be in front of where the workman would ordinarily be engaged. He could become enmeshed in those gears from any one of those thousand chances. The investigation of the accident disclosed that the injured man had been employed on that particular operation for upwards of a year. I did succeed in finding one or two workmen who claimed to have cautioned him about leaving this removable panel off, but I was unable—either from any other workmen or from the man himself—to find that the foreman had ever cautioned him about this unsafe practice.

So, such panels should be securely fastened. I can cite you a dozen instances parallel to that, where the object and purpose of the guard has been absolutely nullified, simply because they were hung on the machine.

A flimsy guard indicates careless consideration of the dangers which it is designed to eliminate and implies a lack of sincerity—they should be substantially built so that they may withstand possible injury and, if practicable, of such strength as to retain any flying pieces of transmission, machine or material that might result from breakage.

Except where acid or fumes make it necessary, wood should not be used in the construction of a guard, and in only a few instances should guards be of solid construction. Oil-soaked wood creates a fire hazard, and many times have I found oil-soaked thread, lint, waste and dirt in the recesses of inclosed guards only waiting for the right condition to burst into flame.

An open mesh affords an opportunity to view the movements within, and the early detection of any irregularity as well as a means of ventilation.

In a big sheet metal factory, I found on the end of one machine a very large gear and the usual accompanying spur gear inclosed in a solid sheet iron guard. A beautiful installation, there were no projecting corners or edges, nothing for anyone to get caught on, highly polished, very nice, and looked very fine. As a matter of curiosity, I suggested that they take it off and see what could be found. We found that the gear was about one-half imbedded in pieces of metal.

Material used for the construction of guards that is made by a shearing action, will have a burred edge on the die side, creating a wrong and right side of the metal. In assembling such guards the rough side should not be exposed, as the contact of the employees may result in serious cuts and lacerations. There is also a greater opportunity for the clinging of dirt, waste and lint and the catching of clothing.

Efficient safeguarding always gives due regard to production. It has been said that any one can eliminate the mechanical hazards, but the relative effect upon the operation and production of the machine is often disregarded.

In many cases, the safety engineer has for the moment become an efficiency engineer and has succeeded in increasing output as well as acquiring safety. I have in mind the case of a semi-automatic feed for a drawing press operation which reduced the accident frequency over eighty per cent, and increased the per capita production to more than thirty per cent, necessitating a revision of the bonus system.

Full automatic guards at the point of operation will often completely remove the operative hazard and permit a speeding up of the machine.

Whenever possible as in the case of extractors, tumblers, etc., the guard should be interlocked with the operating mechanism.

It is the practice of the Utica Mutual Insurance Company to temper the suggestions resulting from its inspections with common sense and judgment. Our standards are fundamentally based upon those standards by which the risk is measured for the determination of insurance rates.

Standards devised by committees of men either for insurance purposes or as a basis of state law are limited to a material extent by the experience and knowledge of those constituting the committee. There are, of course, available statistics and records, but these records do not receive the consideration that is accorded to the expressed experience of the committee members. The

natural result is, therefore, that an unusual experience on a few causes of accidents results in unusual emphasis to these causes and the resultant requirements are made relatively severe.

The monetary value assigned to the different hazards reflects the combined experience of companies participating in the formation of the rating schedule and denotes the relative value of hazards in accordance with this experience. It cannot be expected, however, that an experience covering the entire United States will be paralleled by the experience of a company which restricts its business in territory, nature of industry, and quality of risk. The common and accepted standards are, therefore, modified or intensified as our own experience dictates.

We also consider the probability of the accident from the cause under consideration. This may appear in contradiction to the statement previously made, that all accidents must be prevented. But, it must be remembered that the majority of plants that come under our observation are not modern in either construction or equipment, and that in such cases the degree of accident prevention desired is impossible of attainment. The best that can be secured is an elimination of the major hazards and of such of the lesser hazards as may come within the limits of practicability. We are yet to find anyone experienced in accident prevention who will claim that all accidents are absolutely preventable and this condition will pertain just so long as a human being remains imperfect.

Much of the criticism that in the past has been directed towards the well intentioned efforts of safety engineers has been occasioned through the lack of practicability of the suggestions which they have offered. Some border even upon the nonsensical.

I have in mind the report of an inspector who discovered in a plant the usual type of gasoline engine equipped with a double fly wheel. His little book of instructions disclosed that all such fly wheels should be guarded in accordance with the standards therein set forth. The engine was situated in the corner of a building, so close to the two walls that it was impossible for anyone to reach the inside fly wheel except by climbing over the engine. Notwithstanding this situation, the recommendation went forth in mandatory form that both fly wheels must be guarded with a standard rail. This is what I mean when I say that recommendations must be tempered with common sense.

It also follows that there are very few inspectors who are conversant with the details of processes in every plant that they may visit; and it has appeared to us as good judgment, substantiated by successful experience, to discuss with the foreman, or those in immediate responsibility, the practicability of our suggestions.

By so doing, we immediately establish confidence with the foreman. We have consulted him. We have solicited his opinion, his views. We have explained to him the conditions which we desire to attain and many times have we found that the foreman, once comprehending the situation in its entirety, has himself been able to offer very practical and very efficient suggestions.

In a great many cases, unfortunately, the inspector is but a mouthpiece of the various agencies handling patented devices. We have in a great many instances been able to devise what may be termed "home made" guards

with the same, or perhaps higher, degree of efficiency at a considerably reduced cost, thereby relieving the manufacturer of what appears to him as a useless expense of a large sum of money.

An automatic apron guard for a jointer, for instance, may easily be made in any plant where a jointer is found from a piece of hard wood fashioned from pattern on the band saw; a piece of sash weight or something similar; a small pulley such as is used on awnings and a piece of sash cord. Some use, in addition, trunk casters. The result is a full automatic apron guard which fulfills all the requirements that can be possibly expected and all the requirements of insurance carrier and state law. The expense is nominal; the manufacturer is impressed with the saving in cost and further that such guards are no longer enigmatical but can easily be produced in his own shop. Reports from this type of guard have always been satisfactory. It does in fact eliminate some of the hazard offered by certain types of old style jointer guards. Unfortunately, it has been the experience of some manufacturers that the design of the guard increased rather than decreased the operative hazards. This possibility should always be given careful consideration.

The foreman should realize that the necessity of maintaining a guard is as essential, in fact more essential than the maintenance of the machine proper. It forms a part of the machine and should not be disregarded simply because it does not transmit power.

If a die in a machine or any moving part becomes broken, it is easily replaced, but the moving part of any man once mangled or torn or perhaps lost, can never be replaced. The old, old theory that the workman was but a cog in the great productive machine, easily replaced when damaged, was long ago discarded. The workmen of this country spend at least one-third of their living time within the confines of industry, subject to the unusual hazards created by that industry. They have the moral right, and for the most part the legal right, to expect that they will be held harmless as far as possible from the unusual dangers to which they are subjected through the nature of their employment.

The foreman is in reality "his brother's keeper" and his conduct and discharge of his duties should be practical exemplification of his responsibility. Negligence in the maintenance of guards implies disregard for the principles of safety which will absolutely determine the value of the safety movement within the industry.

The position of foreman implies skill, ability and knowledge of the operation of the machines under his direction. It is presumed that he is as efficient in the operation of these machines as are any of his workmen. He is in close personal contact with the employees during the time that they are subject to the unusual hazards of the plant and in directing the productive effort should at the same time direct the safety effort. The advent of a guard at the point of operation on a given machine should immediately require the attention of the foreman to the end that he may become as proficient in the operation of the machine in its new condition as he was before, and by his personal demonstration convince the skeptical operator as to the feasibility of the device.

The greatest aversion to point of operation guards is found in the bonus and piece workers who see in them nothing more than a curtailment of their earning ability. The protest from the pocketbook is always emphatic but,

if the foreman can by personal demonstration show that the same rate of production can be maintained, the battle is won. It is to be conceded that in some cases safety devices have reduced production. Fortunately, the manufacturer has been only too glad to pay the price in an increased rate for the sake of safety.

The employee must be convinced that the use of guards upon the machine and the extra effort that may be necessary in making adjustments, oiling, etc., is but a guarantee of his future security—a life insurance without premium.

There came to my attention recently the report on a plant in which there was a small press operation and the presses were equipped with a two-hand tripping device. The inspector found that the left-hand portion of the device had been wired to the side of the machine. The right hand lever had attached to it a piece of rope through which the operator's foot was placed in a loop on the lower end. In reply to the inspector's question, the foreman pleaded ignorance as to knowledge of the purpose of these devices. He never knew, he never had been told why they were installed nor of their purpose. He, through ignorance, had permitted an investment of several thousand dollars to be lost and was permitting his operators to take unnecessary and unwarranted chances. The results of this safety incompetency are noted in another case in a plant making lamps and lanterns with a large percentage of blanking and forming operations. Gate guards were installed on these presses. The employees worked on a piece basis and some aspired to inflated earnings. The nominal average production per employee was in the vicinity of 1,700 pieces per day. One workman was averaging from 2,300 to 2,400 pieces per day—almost a fifty per cent increase. He had found that the action of the guard prevented the attainment of his desired output and disconnected it, as a result of which the plunger disconnected a considerable portion of his right hand. The foreman had full knowledge of the situation and rather gloried in the ability of this workman to attain such a speed. Today, that employee is waiving a white flag at a railroad crossing at a wage about one-quarter of his previous earning capacity.

The foreman is in a measure an agent of his employer and in such capacity he should take a full measure of his responsibility. The requirements of the State Labor Law should be familiar to him, especially those which pertain to his particular field of activity. He should in any event have full knowledge of the requirements of fire prevention. He should be fully posted as to the sanitary requirements. Where special hazards are created by reason of the nature of the material or processes, he should also be versed in the requirements designed to eliminate the chance of accident from the unusual conditions. Workmen are not presumed to know.

The old excuse that the injured man should have known better no longer holds water. The principles of safety were not included in the curriculum of his school of experience. He acquired his skill and knowledge as a tradesman through instruction, personal observation and personal experience. He is learning safety now and that knowledge can be acquired only by instruction and observation. If we wait to complete the education by personal experience, it will generally be too late—many do not recover from their first serious lesson.

The foreman must see that his men know how to be safe men; he must educate until the resultant safe practice has become a habit so fixed as to overrule any tendency or inclination to laziness or disregard.

DISCUSSION

MR. CAMERON: The discussion will now be opened by Mr. Frank M. Ward of the Otis Elevator Company of Yonkers.

MR. FRANK M. WARD: Mr. Chairman, Ladies and Gentlemen: I have listened with considerable interest, not only to Mr. Cole's paper, but to the other papers previously read this morning. And I wish to pay this tribute also to the foremen, in fact, the well deserved tribute for the great and important part they are playing in the safety world to-day. They certainly are the people who are getting in touch with the men who are doing the real work in the safety world.

Mr. Cole's paper very well covers the particular part that the foreman plays in the guarding of machinery, except in what I might say a few details that have occurred to me as I heard him read the paper. In other words, one of the things that appeals to me that ought to be considered in any industry is, that safeguards are of vital importance and the standardization of the guard. Give all due respect to the foreman who designed the guards, but if you have an industry and each foreman in his own way plans out or designs a guard, you may have a great multitude of various kinds of guards for the same specific purpose.

At the Otis plant, with which I have the honor to be connected, all of that particular part of the work is done on recommendation of the foreman and safety committee. It is directed through one department which takes all of that character of work in hand with the result that practically all of the guarding is done in a similar way on all machines of the same type.

Another matter that I would call attention to is the matter of the foreman's following up to see that the workmen, or the operators, of the various machines do properly use the guards that are installed on the machines. I believe you will agree, in a great many cases the men find—as Mr. Cole stated—that for very good reasons of their own they are able to sidetrack their guard and, in their own belief, get along as well as with it. That belief, I think, is prevalent in wood-working departments. Sometimes, instead of saving their hand, it will knock their eye out in leaning over.

Another point occurred to me, the necessity of getting the co-operation not only of the foremen in the matter, but also the man who is operating the machine. Get him to assist, as Mr. Morris said in the early part of his paper, to help design, plan and place a safeguard. Get his co-operation which will mean the ultimate success of the safeguarding throughout the plant.

I won't take up any more of your time, because I believe that a great many people here would like to get detailed information in regard to the methods and courses pursued and used in safeguarding.

GENERAL DISCUSSION

MR. A. H. LYNCH, National Safety Council, Chicago, Ill.: I was very much impressed at a plant of ten thousand employees when we took a vote of

superintendents — about thirty-five — and they all were in favor of solid guards but one, and he happened to be the foreman of the sheet metal department and had built a great many wire guards.

I can't determine why the thing came about as it did, but the superintendent of each department had no objection to the style of guards used throughout the plant. I have never been able to see why they wanted a solid guard.

MR. G. K. WARNER, L. E. Waterman Company, New York City: Mr. Cole spoke about making a different die guard. In New York City, of course, we all know that most accidents happen on presses where punching operations occur and in our factory we have a number of foot tripping devices on our presses on which we had most of these accidents. So, we got together and discussed the best way to work it out and to make the guard fool proof. Most of the guards on the presses are a sliding device and we place in front of them, either an open wide mesh so that the operator can not put his or her finger under the punch, or some of them we put a string on so they are carried back automatically. Then we put on that die either an automatic knock-out device, or high pressure compressed air device. So as a result of this we haven't only solved the safety problem, but we have removed in the mind of the operator the constant fear of injury so the operator can work to his best strength. We have increased in production in most cases where the safeguards were put on presses. The cost is an expensive proposition, but it pays and the operator is absolutely safeguarded with that type of die. I state that for the benefit of the others who might be interested.

MR. G. S. RAVEN, Manufacturers Safety Bureau, Watertown: There have been quite a few remarks made in regard to the foremen. I would like to speak a word for the foremen.

I believe a great many guards are not being used in the different manufacturing places because most of the guards were not made in an efficient manner in the first place. I believe that if the manufacturers and those who make the guards, and the safety men, would try to meet the conditions that the operator of the machine has to contend with, that more of the guards would be used. I have found if you put a guard on a machine, without interviewing the fellow who has to operate the machine, you will have the guard over in the junk heap. Whereas, if we ask the fellow who operates the machine what conditions he has to meet; how often he has to change the belt, how often he has to oil that machine, and all those things, and if we get the foreman of the department and the master mechanic together and talk over the conditions we have to meet, and make a guard to meet those conditions the guard will be used ninety-nine cases out of a hundred.

That is the point I had to bring up, that if the guard is made to meet the conditions which the operator of the machine has to contend with, that the guard will be used and they won't have the trouble of having somebody chase around the plant to see if they use the guard or not.

MR. V. A. ROUSCH, American Radiator Company, Buffalo: I realize that the state inspectors are about to listen to what I am going to say, and, of course, I am going to tell the truth and nothing but the truth.

It is a habit of the American Radiator Company, that when a machine comes into the shop it is the committee's business to see that the construction of the

guard is dictated, and before the operator starts to run it this committee sees that the guard is on. I am a full believer that all those things should be settled before, or at the installation of the machine. In fact, the operator, of course, should be consulted because he is a man that knows more about the machine — after he runs it awhile — than the man who made it. He can give you points that no one else can.

I say in the face of the state inspectors, it is a good thing to keep on the right side of him, he gives us a good many pointers. I can remember the time when this wasn't so, but the accidents ran up so it got appalling and I am going to say that I think it is pretty hard to beat the foreman along that line today.

MR. EDGAR R. PERRY, Eastman Kodak Company, Rochester: From where I am sitting, the most brilliant example of Mr. Cole's remarks about a good guard out of place, is the shade on that forty watt lamp in that standard on the platform.

I am interested in the remarks that have been made about taking into account the operator of the machine, and that of standardizing the guard over a great number of machines. It seems to me that is a very desirable thing to do, but where a great number of operations are being performed upon the same type of machine it looks as though a different guard might be necessary for several of these operations. Probably the design of a good guard includes a time study and motion study and a physiological study of the man who is doing the operation. For instance, if we are guarding a punch press we realize that the guard must not limit the man who is feeding the material into the machine. We must also consider the natural way for him to put the material into the press. His natural way of doing it, is from the elbow because the arm is pivoted there and requires less physical effort. Now, if we design a guard that makes him feed the machine from the shoulder it is going to decrease production and increase friction on the worker. It seems to me the best guards can be designed from the complete study of the man and the machine.

MR. T. W. RUSSELL, Globe Mills, Utica: The gentleman who has just spoken strikes quite a keynote in the use of the word "study." For over a year we, in the Globe Mills, have been studying, trying to find proper ways of studying our machinery. In this study we have found that it was necessary to conform to the ideas of the foreman, also to the whims and notions of the operators, and also study into the ideas of the management, and into the laws of the State. We have found that there were five things we had to contend against to design a guard which would meet all the requirements.

The American Woolen Company, which is the parent company of our mills, has provided an engineering department which has sent out their engineers to assist the various mills in this study. For six months an engineer from our engineering department and myself have been studying this problem, and the result is that we are trying to conform to the idea of standardization and meet the ideas of the various foremen. Up to the present time we have accomplished a great deal, but we have not yet completed the work. I wish to state that the State Industrial Commission has been very lenient with us, and I wish to thank the Commission for that leniency in giving us time to

work on this problem and study it and prepare guards which will make them guards of safety which is the intention of the law.

MR. KIRSTEIN, Kirstein Company, Rochester: There is another angle to the question, namely, the action of the eye in co-operation with his work. I wonder how many plants consider that in trying to create a better condition for the workmen with the guard. We have found a great deal of that and we should know some of the faults. You find much trouble there that you don't expect to find.

MR. E. VINCENT FIOCCA, Business Representative, Laborers' Union, Local 370, Rochester: I represent all the workers, laborers, and unions of Rochester; they sent me here. I have listened to the reports of different firms from the different sections, different industries. On many occasions, I am able to say, you will find that no man can work on the punching machine without the necessary guard. I can show you, I can point you out a case which only happened about six weeks ago. A young man on a punching machine was working and after half an hour he got one finger off. What was the cause? The negligence of the foreman who was working in that department. First of all the foreman's duty is to instruct those men what the performance of that work is and how to manipulate that machinery.

We will find everything in that problem that we don't find elsewhere, the safety of the workingman in the building industry, street construction, etc. On many occasions we will see a contractor building a sewer and not providing for the safeguards to hold up the banks on one side; we will find a case in the building industry when the contractor will neglect to build a runway under proper safe conditions.

Many are making remarks about the foreign element. It is true, it is very hard to understand the foreigners of different nationalities. If you get near them and teach them the proper way, the American way, you will become such leaders of the American institutions and human endeavors as your forefathers were.

When the foremen go back to their jobs and take up the safety conditions, teach your men, show them which is the best safety, don't show them one side, to speed up—show them to save their limbs too, because on many occasions we find the Industrial Commission with piles of claims on their desk and people all over the city asking for charity. I know that this great America will stand no such outrage. 'This' country was based on redemption of humanity and let us help build one great building for the opportunity of the states united.

TUESDAY AFTERNOON, DECEMBER 2

FOREMAN'S DAY

PRESIDING OFFICER: W. H. CAMERON, MANAGER, INDUSTRIAL RELATIONS,
EASTMAN KODAK COMPANY, ROCHESTER, N. Y.

MR. CAMERON: Ladies and Gentlemen: We will resume our program this afternoon by listening to an address on the subject of "The Foreman's Relation to Shop Safety Committees," by Mr. J. A. Oartel, Director of Safety, Carnegie Steel Company of Pittsburgh.

THE FOREMAN'S RELATION TO SHOP SAFETY COMMITTEES

BY J. A. OARTEL, DIRECTOR OF SAFETY, CARNEGIE STEEL COMPANY, PITTSBURGH, PENNSYLVANIA

MR. J. A. OARTEL: Ladies and Gentlemen: As I stand looking into the faces of this magnificent audience of men and women gathered from the industries of the Empire State, I wish that I might have what the school boy wished for when he wished for three eyes. His teacher who heard the wish thought she knew what he would do with the third eye if his wish were granted. She said, "Johnny, if you had three eyes I know what you would do with the third one."

"What would I do, teacher, with the third eye?"

She replied, "Why you would put it in the back of your head so you might see me when I am approaching you from behind."

But Johnny said, "No, teacher, I wouldn't do that with it. If I had three eyes I would put the third one on the end of my finger so when I didn't have the money to see a baseball game I could stick that finger through a knot hole and see what was going on on the other side of the fence."

So, I wish some power like that might be given me that I might get down into the depths of this subject and bring you some real good things.

The Foreman and the Shop Safety Committee, the two chief factors that make for safety in our industry. I shall treat them in their natural order. First, the foreman.

The foreman holds a unique place in our safety work today, not only in our safety work but he holds a unique place in industry. He is a leader, he is a leader first in interpreting the policy of the company to the men. If you can remember back twenty or thirty, or forty years, to the time when American industry was, if not in its infancy yet not the full growth which it enjoys today, you will remember that the employer came into very close contact with his men. He moved among them every day; he called them by their first names, and after working hours he met with them in social intercourse. I remember very well when I, as a boy, entered a steel mill, that every man in that mill had access to the general superintendent—not alone with his

working problems, but with problems that related to other parts of his life. And if Jones was compelled to lay off through sickness, for a month or two, I remember very distinctly that a load of coal, or an order of groceries, or something like that, went to Jones' home and the superintendent paid for it.

How different our present day methods! Today we have large industries under one general manager, or general superintendent; where the working force is anywhere from twenty to forty thousand men. Even if he had the desire it would be impossible for him to come into close personal contact with his men. It is also very important that this old time personal contact be preserved. Who then shall bridge the gulf? The foreman. The foreman should not only know his men as workers, but as men. He should learn their first names; he should know their personal relationships; he should know their financial troubles, and if need be give his advice upon these questions. The foreman is also a leader in production. When the superintendent comes to the shop in the morning and takes the daily sheets that are laid upon his desk and reads that the plant was shut down for an hour last night because there was a break down, he immediately sends for the foreman of that department and asks the reason for the delay. The foreman has to give a good and sufficient excuse or his job is at stake.

The foreman is a leader in production. When a breakdown occurs, the foreman is immediately sent for; in all matters relating to production the foreman is held responsible. Just as the foreman is a leader among his men, just as he is a leader in production, he should be a leader in safety. In most industrial establishments of today the safety movement is no longer a matter of safeguarding, but a matter of education. The foreman should be a leader in this educational work.

There are two specific things he can do in educating the workman along safety lines. First, he can pay special attention to the new employee. Statistics tell us that accidents occur to new employees in the ratio of six to one as compared to old employees. This, then, is a task for the foreman. He should take each new employee as he comes on the job and point out the dangerous places and inform him of every dangerous practice. If he can't do this personally, he should entrust it to some one in authority whom he trusts, who is willing to assume the responsibility and see that it is done. It is not enough that at the employment office a booklet be handed to the new employee by an interpreter, a book of safety rules, which he will never read, and that he be told to be careful. Unless he is taken in charge by the foreman when he comes on the job and thoroughly instructed in every hazard pertaining to the position, and told of every dangerous practice by that foreman, that foreman is not living up to his responsibilities and is no longer fit to be a foreman.

The old employee needs watching too. I attended a safety meeting at one of our plants not long ago, where mention was made of an old employee who persisted in riding the crane load. There were danger signs posted in all parts of the plant warning against this practice; he had been admonished by the foreman and yet he persisted in that dangerous practice. Here was a task for the foreman, to get the message to him in some way to cause him to see the error of his ways and turn from them, or else discharge him. A man like that, who persists in dangerous practices, will wreck any safety organization.

It is my privilege to get into a great many industrial establishments and observe a great many foremen at their work. Whenever I see a gang of men doing their work in a careful way, I immediately conclude that gang has a careful foreman. On the other hand, if I see a gang of men doing their work in a careless way, I can come to only one conclusion, and that conclusion is that that gang has a careless foreman.

Shop safety committees are also sometimes called workmen's inspection committees, their functions are almost identical. In discussing shop safety committees I shall treat it under two headings, the man and the job.

We hear a great deal about selecting the man for the job. Why not do this in our safety work, which surely ranks in importance with any work that is being carried on in the world today. What type of man, then, should we have to serve on our safety committees? First, we should have intelligent men. By the word intelligent I don't mean men with the training of the schools or anything of that nature, I mean men who are at least fairly familiar with the safety work, with the processes or operations which they are called upon to inspect, and with the hazards incident to that process or operation.

A mistake that has been made in the past in our safety work is that we haven't in the beginning lined up men with the idea of safety. I have known men in the mill, in the old days, steel blowers, open hearth melters, rollers, who have absolutely refused to teach a new man their job because they thought if this new man should acquire that knowledge, some day he might replace them and they would lose their job. I fear, perhaps, this spirit has animated us too often in our safety work. If I were called upon to appoint safety committees, the first thing I would do would be to get those committees all together in a meeting and I would get some big safety enthusiast, some man like R. M. Little, or A. H. Young, to come and speak to those men and tell them about the bigness of the job; to tell them that that job is no less than the conservation of human life. Then, after that, I would take those men around through the plant and instruct them in every hazard pertaining to the various positions.

How do we go about it now, in appointing our safety committees? A letter is sent to the foreman, or the sub-foreman, appointing Jones, or Brown, or Smith, on the safety committee for the next six months. Is it any wonder that their work is slipshod and ineffectual?

Next I would select men of good common sense. Under this heading I wish to include a number of qualities which I have not the time to describe in detail, men of tact and discernment and understanding human nature. They should have the courage of their convictions, as they may sometimes be called upon to take issue with those in authority. They should be men of likeable dispositions and broad sympathies, who have the power to draw out other men; they should also be men of mechanical turn of mind, if possible, as they may sometimes be called upon to devise safeguards where they are needed.

In this short summary you may think I have set the ideal too high, that the type of man I have described does not exist in the ranks of industry. If you would make that statement it would only be partially true. As long as we don't set up high ideals that call for the best there is in a man, just so long will our work and attainments be mediocre and we shall fail to accomplish deep and lasting results.

The work of shop safety committees in my mind, should follow two general lines, namely, inspection for mechanical hazards and for dangerous practices.

The safety movement has borne much fruit already in engineering revision, but perfection has not yet been attained. It is my privilege to examine every year about fifty thousand accident reports. Of course, I can't examine that number very closely, but I pay especial attention to the fatalities and lost time accidents. Among that number in a company which is doing safety work that ranks second to none in the world today, I still come across accidents that might be prevented by engineering revision. There is a place yet for the real safety engineer. We can not hope to expect much suggestion in engineering improvement from the shop safety committees unless such glaring conditions exist that they shall be apparent to every one. We can, however, expect much from the shop safety committee in the way of correcting dangerous processes that don't require the services of a trained engineer. Some of the best safeguards that I have known, and that have by their installations made processes that were dangerous absolutely safe, have been designed by the ordinary working man. If we take our workmen entirely into our confidence, they will surely come along with suggestions for safeguarding that will be beneficial alike to employer and employee.

After the foreman has done his full duty to the new employee in the way of instruction, there still remains a great deal that may be done by the safety committee. What more efficient work, what nobler work, can the shop safety committee do, I ask you, than to prevent accidents. This can be done very effectively by the committee taking charge of the new man until he learns the job thoroughly and is familiar with every hazard and every dangerous practice. I would like to see this plan tried out to its ultimate conclusion somewhere. In other words I would like to find an ideal shop safety committee who would be on the job all the time looking after the new employee and who would keep such thorough watch upon him that he couldn't make a false move. I would like to see that plan tried out in a plant that has a high accident rate, and I am very sure it would result in a reduction of accidents.

When we have done our duty to the new employee, our work is only partially done. There still remains the old timer who, because of his familiarity with the process, becomes careless and thoughtless. I worked for twenty-five years in the Bessemer department of a steel mill where the sparks and the molten metal are flying. People used to come in there and say, "I wouldn't work there for anything in the world." I totally disregarded that danger because I was familiar with it. And so today, we have men of that type who, because of familiarity with the job, don't consider the danger. I have known men of this type who disregarded all safety rules; they are a law unto themselves; they persist in taking a chance; they perform their work in a way that results in accidents to themselves and to their fellow workmen. I remember very well a man whom I worked with in the mill in the open hearth department. He was a very good worker, earnest and enthusiastic and the first man on the job, willing to run along the line of open hearth furnaces and lend a hand to any one. But, he was always getting hurt and we found that he came to the emergency hospital twenty-two times in twenty-two months. He quit our employ and sought employment

in another company and then in a short time I heard that he had had a limb taken off and that afterward he had died in the hospital. I knew that man like a book. I knew how he relished the idea of taking a chance. Suppose he is a good worker and willing and all that sort of thing, he is a hazard, he is a detriment, and a man like that is going to wreck our safety organization and I believe we should dispose of him. But, a man like that generally takes these chances when the foreman isn't around, the foreman doesn't know anything about it. The first thing he knows the man is carried to the hospital. Can not the shop safety committee, the men who are on the job, assist in doing away with practices like that? Of course, you know as well as I know, that men hesitate to report things like this to the foreman, but suppose we have a man running wild on the streets shooting up the town, we don't hesitate to confine him behind the bars and we should do the same thing with a man who persists in wrecking our safety organizations. And so I believe the shop safety committee can do a great deal of good work along this line. I shall now outline, briefly, the ways in which some of the larger companies carry on the work of their shop safety committees.

CAMBRIA STEEL COMPANY

In this plant there are nineteen safety committees composed of three men each, and their instructions are to make a thorough inspection of their department at least once a month and send us a written report. Their duties in addition to this consist of making an investigation of all serious accidents and to spread the safety spirit throughout their department all the time. After each committee make their report we have an inspector go out from our office, look up the various items, and have orders placed at once to have them rectified. In some cases items found have already been ordered.

The committees change every two months and consist of foremen and subforemen as a rule. Some of them do splendid work, but, as you know, it is impossible to always pick just the kind of men one would like to have in this work. These men are chosen and appointed by their own superintendents who notify us of their appointments. At the close of this two months' period we award a \$10 prize to each committeeman whose department accident percentage shows improvement over the previous twelve months. The committee having the highest average improvement are awarded a grand prize of \$20 each. We find this cash award a great incentive for our men to carry on their safety work.

AMERICAN STEEL AND WIRE COMPANY

The shop safety committees in this plant in the past are known as mill safety committees, and are composed entirely of rank and file workmen. The committee generally consists of three members, who serve from one to three months, one man being kept on from the previous month to act as chairman of the committee. Members of these committees are chosen by their respective foremen, the chairman of the permanent committee designating the foremen who are to appoint a member of the committee each month. These men are picked from the better class of workmen, those who are wide awake and familiar with the operation of the plant. The membership is not restricted to English speaking workmen, however, at least one foreign speaking workman being placed on each committee.

This committee makes an inspection of the plant once a week, and renders a report to the chairman of the permanent safety committee. These men are encouraged to observe and report any unsafe practices, as well as hazardous places and defective equipment.

Each member of the mill committee is given a safety button when he is placed on the committee, which he is permitted to keep after he has been discharged from the active committee. This button indicates that he has served on the committee, and when he is discharged from the active committee, he is instructed to consider himself still a member of the safety committee and to do all in his power to promote safety in the mill. We have found these committees to be a very valuable asset in our safety work, and have received many useful suggestions from them.

Departmental committees are now being substituted for the mill safety committees. There will be one of these committees in each department of the mill. The committee consists of the shop or department head as chairman, and from three to five workmen. The membership of this committee should represent, in so far as practicable, the various occupations in the department. The chairman should be permanent, but there should be a rotation of the remainder of the membership, the service of each member covering not more than three months.

It is the chief duty of these committees to make safer and better working conditions for the employes in their department. They make a study of the general conditions, departmental and occupational hazards and practices, and endeavor to encourage the co-operation of other workmen in reporting promptly for correction any existing unsafe conditions, practices or hazards through which personal injury may result.

These committees meet at least monthly with their chairman for the purpose of making a formal inspection of the department, or interdepartment inspections, review accidents, suggest remedies, physical or operating, and they render a full report of the meeting with their recommendations to the chairman of the general safety committee.

BETHLEHEM STEEL SAFETY COMMITTEE ORGANIZATION

The safety committee organization comprises four divisions or classes, three of these divisions being composed of qualified safety committeemen.

The Permanent Safety Committeeman. One in each department, who has charge of all first aid and safety committee work in his department, and is responsible for first aid equipment, safety bulletin boards, and the distribution of safety literature throughout his department. He makes written reports of accident investigations in his shop. He is under the supervision of the division safety inspector, and is compensated at the rate of \$5 per month, for the detailed attention he gives this work in addition to his regular shop duties.

The Departmental Teams. There are two department teams taking a course in first aid and accident prevention, and who qualify for this work by completing the course with the annual first aid meet.

The Active Safety Committeemen. This group assume their duties upon completion of the course, and serve for one year, or until the next first aid meet. In company with the permanent safety committeeman they make an inspection of the shop once a month.

The General Safety Committeemen. These consist of those who have served for one year as active committeemen. This group are the auxiliaries of the active committees, but do not make monthly inspections of the departments.

Instruction of Safety Committeemen and Training in Accident Prevention

You cannot qualify a man for safety committee work over night. Safety committeemen are not born that way. A man may be naturally careful and prevent accidents to himself, but he must be trained in accident prevention if we expect him to look out for the other fellow. Neither can we expect long service in the shop to qualify a man for accident prevention work. Very often he has grown so familiar with the danger that he does not see it for himself. much less point it out to his fellow-worker. Men must be trained to see the causes of accidents and near accidents in order to prevent them. Such training must come from a detailed study of the unsafe practices and hazards of a particular department. Safe practices covering the various operations are dwelt upon. Departmental accident statistics, and accident investigation reports are used. Photographs and prints showing accident causes help in the work. Current literature is quoted on the subject under discussion, and interchange of ideas encouraged. Much stress is placed upon the attitude and spirit of the committeemen in approaching a fellow-worker on accident prevention work, realizing that accident prevention through education is a persuasive proposition rather than a command. A part of each first aid instruction period is devoted to this work.

Safety Committee Activities

The safety committee organization is the natural agency for all human relation work in the plant, and the effectiveness of this organization can be largely measured by the degree to which it participates in plant human relation activities. The recent Liberty Loan campaign in the Bethlehem plants, and in the subsidiary plants of the Bethlehem Steel Corporation, was conducted by the safety and welfare department. Twelve hundred of the fifteen hundred sellers at Bethlehem were members of the safety organization.

Night school education, athletics, recreation centers, the injured, the sick, the unfortunate, all plant activities of the human element are within the realm of the safety organization. If the problem of the employer and the employee is to be solved finally, the solution should naturally come through the medium of such a democratic organization trained to be considerate and helpful to the other.

A study of the accident statistics at Bethlehem covering the last three years of the unorganized accident prevention period, 1911-12-13, as compared with results of organized work covering the period, 1914-15-16, shows an accident reduction as follows:

Lost eyes	33.65%
Amputations	41.5%
Fatal	10%

The average reduction for all causes was 28.38%, and this despite the fact that accident causes were many times increased due to war production activities.

CARNEGIE STEEL COMPANY

In our own company we have inspection and safety committees composed of both foremen and workmen. At each plant there is a general or central safety committee, composed of department superintendents and assistant department superintendents. The superintendent of the plant or his assistant is chairman of this committee. In each department there is a committee composed of the foremen of the departments. The department superintendent or his assistant is chairman of this committee. In each section of the department is a committee composed of workmen with the foreman as chairman. The committees composed of superintendents and foremen are permanent; those of workmen serve for a period of six months. The duties of the workmen's committees are to have jurisdiction over the section in which they are employed. They are required to inspect for both mechanical hazards and dangerous practices. There is a very close connection and co-operation running through the entire membership of these organizations. The matters discussed by the general safety committee of the plant are handed down to and discussed by the department committees, and, by them, to the workmen's committees. All recommendations from the workmen's committees are referred to the department committee, and, if necessary, to the general safety committee of the plant for approval. We find that this system of safety organization gives good results. The superintendents and foremen form the backbone of the organization. They assume the responsibility, outline all policies, and direct the work. The workmen have their part in inspecting and looking after their own little corner.

How thoroughly should a plant be organized? Some statistics that I have gathered along this line may be interesting. I have found that a comparison of eleven plants of the same company showed that the plant that had the most men on safety committees, in proportion to the force, had the best accident record. The proportion ranged from one safety man to every thirteen employees, to one safety man to every one hundred and seventy-three employees. The plant having one safety man to every thirteen employees has maintained the best safety record in the company for four years. The other plant is near the bottom of the list. You may draw your own conclusions. To sum it all up, the same things that bring success in any field of endeavor will bring success in accident prevention. These things are — organization, leadership, energy, tact and last, but not least, good horse sense.

The foreman and the shop safety committee, how shall they co-operate and help each other? I think co-operation is the word that should be used to describe their relationship. Their functions are slightly different. The foreman is a leader and should direct the work. The shop committee should assume the detail work which the foreman cannot do. With complete co-operation on the part of both parties, I think the ideal safety organization will be attained.

DISCUSSION

MR. CAMERON: The discussion of Mr. Oartel's paper will be opened by Mr. M. H. Stearns, Safety Engineer, Donner Steel Company, Buffalo.

MR. M. H. STEARNS: Ladies and Gentlemen, Members of the Congress: I don't know why Mr. Daly picked me out to lead this discussion this after-

noon inasmuch as the company whom I am representing is one of the baby organizations of this State. In fact, we have only been in operation since the fall of 1916.

Mr. Oartel's paper deals with shop safety committees. While at the present time we do not use shop safety committees, we have got an organization, including the whole plant in reality, who work along those lines. Although they don't meet at any given time, they don't inspect monthly, but they are open at all times to offer suggestions which will improve conditions and go to further the safety movement.

Mr. Daly, when I tried to get out of doing this little stunt, said, "Why don't you at least tell us what you have been doing? You can do that." I told him that I would be glad to do that if it would help out.

We have at our plant, one man detailed to work in the plant continually, known as a safety inspector who devotes his entire time to plant inspection. He helps out in the design of safeguards that will prevent accidents as much as possible (sometimes they don't), and getting the men who have a tendency to be careless — talking to them, not bawling them out, so to speak, but talking to them in a heart-to-heart way, explaining their wrongs, how easily they could be injured, and thereby getting their confidence in this movement.

In the short time of our existence our accidents have been cut down — I haven't the figures available, I don't recall them, but I do recall the figure the first month of the organization. It was three per cent on lost time, we had twenty-eight hundred men at that time. The war was on, we were up against it for men, the drain of the draft, the tremendous labor turnover, due to the draft, and the fact that men were volunteering their services — still, even with that handicap we obtained results through the backing of the management, which I believe you will all agree must first be attained before anything can be accomplished. The backing of the management, of the Donner Steel Company, was afforded me during the first of September, 1917. They simply turned me loose to see what I could do. The percentage of lost time cases of three per cent in ten months was cut down to one per cent, and, in fourteen or fifteen months that has been less than half of one per cent, except in July when we went over one per cent.

In the spring of 1918 we did have a foreman's committee and a workmen's committee, but I am sorry to say they didn't turn out as well as we expected. Whether we will get into that again in the near future I don't know. We are not yet what we would call really organized, we are doing everything we can along these lines, we are getting into welfare work — as Mr. Oartel has just outlined — and we hope in the near future to get into it a little further. We hope to do something a little bit different than offering a man his job and his wage. We are planning now to be able to show next year (if it is possible to get the information in time and the necessary exhibits) what we are doing, and are going to try and show that while we are still a young company, in actual operations we are up among the leaders so far as safety is concerned.

GENERAL DISCUSSION

MR. CAMERON: Have any of you any questions to ask Mr. Oartel? Any discussion of his paper?

As Mr. Stearns' remarks have brought out, they found it difficult to provide something for the safety committee to do. I think that is one of the worst things we have to contend with in our safety work, to keep the safety committee going. I think it is up to these safety directors to provide the material. That means that we have to keep up on our toes all the time. Of course, in the corporation it isn't so difficult, because we have each other's experiences to draw from. I imagine a man with a small company, where the accidents are few, begins to wonder what to do next to keep the safety committee going, and I think this might provide for a discussion.

MR. HARMON, Buffalo: I want to ask Mr. Oartel if he receives any suggestions from his safety committee other than the guarding of machines?

MR. OARTEL: Yes, indeed, a number of things along welfare and uplift lines, and all that sort of thing. A great many.

MR. GERALD BELLHOUSE, Deputy Chief Inspector of Factories, England: I would like to preface my remarks by saying I consider it a privilege to be able to attend this meeting to-day. I have been very much interested in this safety movement, which is going on in America. The safety committees are the ones we are especially interested in. There was one point which I want to make, I don't want to make a speech, but I do want to ask the lecturer about the workers in England. It has always been our habit, where we have these committees — I am sorry to say there are not as many as there should be — to allow the workers in a particular department to elect their own representative. Now, I should rather like to ask the lecturer whether you have a similar experience of that kind in the States, and whether it is found good practice for the employer to nominate a representative of the workers or whether better results are obtained with the workers appointing their own representatives?

MR. OARTEL: I have never heard of an American industry working that way. They generally appoint them. What success have you had from electing themselves?

MR. BELLHOUSE: We have one very notable success. At Portsmouth, at their large works there, the custom is for the workers' representative to be elected by the workers in each department. They act on the committee, I think it is a year, and then retire and are not eligible for re-election. The idea is, of course, to spread the safety spirit wider amongst a larger number of workers in that particular place. This is our best-known instance in England; they are nominated by their fellow workers and that course is exceedingly successful.

We have a sort of feeling that if the employer nominates the worker to act upon the committee, he rather loses his position as a worker and becomes somewhat of a boss. We feel that it rather inspires confidence in committees if the workers themselves elect their own representative to a committee.

MR. OARTEL: Mr. Cameron, you have heard of a great many safety organizations, have you heard of this?

MR. CAMERON: I believe Mr. Morris can tell us something about this.

MR. F. F. MORRIS, National Safety Council, Chicago, Ill.: I had in mind to ask Mr. Oartel a theoretical question which, I think, will answer this gentleman and the other gentlemen, too.

Supposing I were a superintendent of a plant and let us say we have twenty-five departments. We have not done to date any real safety work, but I am convinced that we should do something. I am also convinced that it is the foreman's responsibility to prevent accidents in his own department. I call those twenty-five foremen together and I put it up to them that it is their job to keep their men in their own individual departments from getting hurt.

Now, I intended to ask Mr. Oartel would he recommend to me that I hire a safety engineer, or take somebody from the plant and appoint him as safety engineer and then let him select the men who are going to help these foremen prevent accidents in his own department; or, would he recommend to me that I let the foreman choose his own safety men in his own shop? As I see it, the foreman is the only man who knows all of his men in his own shop, and he knows who to put on that committee. A general committee coming into his shop, a committee composed of men from other departments, what does an open hearth man know of machinery? Now, the foreman of that machine shop is naturally going to resent that suggestion to have anybody come from the other part of the shop and tell him what to do. Would he recommend the safety department appoint the committeemen, or would he recommend that the foreman choose his own department committee?

MR. OARTEL: I would first, if I were doing the job, select a safety engineer in the plant — if there was a man qualified for that position — and then I would have him allow the foremen to select their safety committeemen, although there may be a great deal of good in this plan that our brother from across the water has told us about. Mr. Chairman, I feel very gratified in having in this talk of mine brought out the points which have been discussed and we have reached out our hands to hands across the sea.

MR. ORDMANN, New York: Referring to our friend from England, I had the pleasure of being brought up on the other side and emigrating to this country.

Now, he has the proposition there where men elect among themselves a safety organization to represent their departments. That is a thing you can do in England or in Scotland where I belong, but you are in a different country. This is what I have found, that in the old country, as we say, a worker doesn't trust the owner the way we Americans do here. We don't place confidence in the owner or the manufacturer in England and Scotland. In Scotland and England if you select, if I am, as a worker, selected by my fellow workers in my department as a representative, I am right away looked upon as being the manufacturer's man.

In America to be selected that way, that would be the last thing you would hear. It is a different feeling amongst the workers. That is the way I feel about the matter, that is the way the worker feels. In other words, the worker in this country has three jobs probably for every one that they have in England or Scotland; if he feels that he is not getting a right deal on one side of the street in Syracuse, he can cross to the other side and find a job. In England or Scotland you probably start a job when you come out of school and you stay there until you die.

MR. C. D. SHOFF, Safety Agent, N. Y. Central R. R. Co.: Speaking about electing the committeemen and the shop safety committee we tried out that plan in one of our large shops and it worked out fine. We had a man elected from the blacksmith shop, from the wrecking shop, and from the boiler shop. The men elected them at a regular election and we find that the scheme worked out fine. We also at that time had an investigating committee appointed from the shop who investigated every accident that happened in that shop. The responsibility was placed and reported to the general foreman.

I want to say that the results are very gratifying. That is our experience. However, we have on our line about seventy-three safety committees and this is the only one we have elected. I think it works out fine.

MR. E. W. BUCKLEY, Secretary, State Industrial Commission: I wanted to ask if Mr. Oartel would elaborate on that theory of his that the worker who is continuously indulging in unsafe practices should be disposed of.

MR. OARTEL: I can't say very much more, except we are discharging a great many men because they persist in dangerous practices, men who have worked for a long time.

I remember a case where some men were working on a car on a siding, and because a railroad brakeman threw the switch the wrong way another car was shunted in and a man killed. The railroad brakeman came to the office and confessed and did all he could to make the thing right—admitted he was in the wrong—he had been an old hand and yet he was discharged.

MR. CAMERON: There has been a request for some experiences from companies employing a small number of men. What do you do to keep your committees going actively? Can any one give us a few good suggestions along this line?

MR. ORDMANN: We have just started this safety organization within the last five months, and we have only about fifteen hundred workers in the factory at Sherwood. I find it hard myself to go around the factory; I'm supposed to be a safety engineer. But I haven't any real hazards around the plant. I have them interest themselves in fire protection, which is considered safety. I have to go around the factory about once a week and report conditions that might end in a fire. You have to test the water pressure and see that your fire extinguishers are there and filled, and that the building proper is considered safe. All those are considered part of the safety engineer's duties, so we really find that if you take in the fire protection, guarding of the property, safety engineering, and the health of the employees, I think he will be able to find he has more than he can easily handle.

MR. E. R. COLE, Acheson Graphite Company, Niagara Falls: He has fifteen hundred workers, we have three hundred and fifty. The safety organization is organized somewhat along the lines of the last speaker. They have general charge of all safety first, accidents, police force, inspection, along those lines and the safety committee finds plenty to do. I say with only three hundred and fifty employees they are pretty busy.

One other feature I would like to add is the method we use in keeping this before the employees in all lines. I have with me this afternoon two of our men who were to come here on the instigation of all the employees. We

started the proposition as soon as we heard the congress was going to be held. We took a nominating vote in which every employee named whom he would like for the company to bring to this meeting. The campaign was conducted for four weeks and last Tuesday we had the five high men make their campaign speeches during the hour when we have the singing in the week and they got up and told why they should be sent down here.

I am sure that we have got the spirit; they have been talking about it all these weeks about these men coming down. After coming they will, of course, go back and tell what they heard, and I don't care whether you have a small plant or a big one, I think it is a good thing. I think your company will have a good investment in that little thing. The American Steel and Wire Company in Cleveland and the National Safety Council in Cleveland and St. Louis, and a number of the big factories are having big get-together meetings for foremen. I think that is one solution for this problem of keeping the thing stirred up; getting them together in the evening and having a nice little entertainment; having a good speaker and having your foreman, who can talk a little, get up and talk; have a little lunch and a get-together meeting and I am sure it will help to keep the thing alive.

MR. CAMERON: We will now proceed with our program. The next address is entitled, "The Foreman and the New Man," by Alex McC. Hamilton, Director of Industrial Relations, American Radiator Company, Buffalo.

THE FOREMAN AND THE NEW MAN

BY ALEX MCC. HAMILTON, DIRECTOR OF INDUSTRIAL RELATIONS, AMERICAN RADIATOR COMPANY, BUFFALO, N. Y.

In this day of centralized employment departments, there is a danger that the foreman will begin to feel that his personal responsibility for the men in his employ is not as great as it used to be. There is a possibility that he will hold the employment department responsible for sending him men of varying degrees of capability, some good, some bad. There is a further possibility that the safety engineer will be expected to give instruction in safety and to see that machinery is properly guarded, and thus relieve the foreman of any worry on account of the cause of accidents. There is a chance that the foreman may depend upon the welfare department to take interest in his employees and lose personal contact with them himself. Consequently in the development of our industrial relations, it is of the greatest importance that the functions be not so specialized as to seem to usurp the authority and interest that belong to the foreman. It is essential in our efforts to establish a closer relationship with our employees, that the whole organization be made a part of the industrial relations scheme, and be given to understand that their intelligent and sympathetic and whole-hearted co-operation is of first importance in attaining this very desirable end.

It is, therefore, evident that instead of the foreman's position before his men being weakened by the new order of things it should be strengthened; and it is of the highest importance that foremen be kept fully informed as to development in the field of industrial relations, as well as in the processes of manufacturing. His advice and interest and co-operation must be invited and must be enjoyed if any large measure of success is to be achieved.

The time was when the foreman was the only official of the company with whom the workman came in contact. If he was of a genial, kindly disposition, the company was regarded in the same manner. If, on the other hand, he was blunt and rough, the company enjoyed a reputation of the same kind. His was the authority to hire whom he pleased and to discharge whom he pleased, and there was no one to question the justice or wisdom of his acts. It has come to be recognized that, through this autocratic exercise of power, a grave injustice was done to many competent workmen; but now that the hiring is done by the employment department and discharges are reviewed by the director of personnel before a pay order is issued, the foreman has come to share his responsibility with another department. He has been relieved of the task of scouting for labor, and he no longer cares to assume the responsibility for saying that a man can not work in the same plant with him although it is his perfect right to say that he does not desire to have this employee in his own department.

This new order of things, however, does not change the foreman's position before those who come under his supervision. He is still to them the personification of the company's ideals, principles, and purposes. His responsibility is even heavier than it used to be, because of the quickened sense of the employer's responsibility for those who are on his payroll. To be more specific as to the foreman's duty to the new man, let us discuss a few of the real opportunities for service that he enjoys.

When the new employee enters the department, the foreman should see to it that he is received in a manner that will make him comfortable and at ease. It is not sufficient to lead him to a piece of work and say, "Here is your job;" but he should be introduced to the foreman under whom he will work and to some of the workmen with whom he will associate, and be told where to get tools and material, where to find a drinking fountain and toilet, and to whom he should look for information and instructions. Such treatment will make him feel at home and contented, and will help him to begin producing efficiently in a much shorter time than if he is left to find out as best he can.

The foreman should also see to it that the new employee is provided with the best tools and the best machinery and the best equipment in his department, instead of with the worst as is very frequently the case. In doing this, he will bear in mind the fact that breaking in a new employee is, at best, a costly undertaking and that the new man will spoil work and waste time and cut down the amount of production to a very large extent. Taking all of these losses into consideration, it is very conservatively estimated that it costs an average of \$50 per man to break in new employees. If, therefore, the foreman will bear this expense in mind, it will be easy for him to understand that the time thus spent with the new employee is not wasted, and that it is not sentimental foolishness, but that it can be readily expressed in terms of decreased cost. Every foreman recognizes the fact that the clearest indication of his own value is his ability to increase production at a lower cost. I know of no one thing within the foreman's power that will add to his success more than giving careful attention to the new man who enters his employ.

In addition to making the new employee feel at home and giving him a proper start in his duties, the foreman should give him specific instruction as to the hazards of the occupation and the way to prevent injury to himself

and his fellow employees. The dangers that lurk near a workman are not always immediately apparent, and a few suggestions and warnings by the foreman may prevent injuries that would be of serious consequence not only to the employee but to the company. I once heard a production manager remark that it is the safety engineer's job to give instruction in safety, and that the foreman has enough to do to look after production. This was perhaps an opinion hastily expressed without full consideration, because it would be an impossibility in a large plant for the safety engineer to take each man into his department and instruct him in regard to accident prevention. If the foreman does this himself, it not only keeps him alert to the dangers existing in his department, but it shows the new man that some one is interested in him and is anxious to prevent his getting hurt. It is just as essential to production, to show the employee the *safe* way to perform an operation, as it is to show him the *right* way to perform it. Every safety man who has worked on accident prevention and has safeguarded the machinery and educated the workmen until accidents have been almost entirely eliminated, trembles when told that the working force must be greatly increased, because he knows that the new men will not know of the hazards and that in their awkwardness and ignorance many of them will get hurt. Safety signs and bulletins and danger signals will help prevent injuries, but there is no influence nearly so potent as the kindly instruction and advice and warning of an interested foreman.

From what has been said in your presence to-day, you will realize that the foreman is to the new man, an instructor, advisor, and friend; and I do not know of any greater compliment that could be paid a foreman than this, nor do I know of a greater responsibility than this. The opportunity to be so regarded is his. The duty to be worthy of it is his, and the reward that comes to a man who has dealt fairly with those entrusted to his care is his. Reward not only in the form of increased remuneration and responsibility, but reward in the far greater and more satisfying sense of a knowledge of duty well performed, and of having extended to the other fellow the same courteous and helpful consideration that he would like to have extended him if he were placed in the same position. The foreman gains the new man's confidence by making him feel at home and by showing him how to do his work so he can produce more and earn more. He strengthens this confidence by teaching him safety and by helping to keep him from being injured. This feeling of trust having been established, the workman soon comes to his foreman for advice and when this is given unselfishly and helpfully and cheerfully the new man realizes that he has found not only a good place to work, but that in addition he has found a friend. He asks his foreman's opinion when he wants to buy a home, he comes for sympathy when there is sickness in his family and for congratulations upon the arrival of a healthy son. Think of it men; what higher compliment could be paid you than to have those under you say, "My foreman is my instructor, my advisor, and my friend!" I do not believe there is a man within the sound of my voice, whose breast would not swell with pride at having his men so regard him. I recently met a man with whom I was associated in industry fifteen years ago. He has gradually risen until now he is assistant superintendent of the plant, and he told of how he had been a "big brother" to his men and of how his attention to safety had saved lives and property on more than one occasion.

He lives in a small city in the Middle West and owns his home and raises bees and vegetables, and all the surplus over what his family needs goes to his friends, most of whom are his employees. We cannot all give our men honey and tomatoes, but we can all give them "the milk of human kindness."

Foremen of the present day who have adhered to methods of days forever departed; I call upon you to awake! Awake to a consciousness of the responsibility committed unto you for the human beings under your authority! Awake! not from a fear of being replaced, but from a sense of your duty to your employees. Cast aside the stern and austere policies that have been condemned, and acquire a real, genuine, brotherly, interest in the new man who enters your department. Welcome him with a friendly smile, give him careful instruction in the *safest* way and the *best* way to do his work. Treat him like a man. Treat him as you would like to be treated.

When you can do this, you have brought yourself up to a higher level. You have yourself become more of a man. You are more comfort to your family, and you are more esteemed by your neighbor. You are worth more to your company, and you have that inestimable personal satisfaction that belongs to the man who loves his fellowmen and is square with them. When our foremen come to realize that conservation of men is just as important as conservation of material, and are willing to spend time with the new man, we will have gone far toward establishing ourselves in the confidence and good will of our employees.

DISCUSSION

MR. CAMERON: Mr. C. L. York, Department of Safety, General Electric Company of Syracuse, will open the discussion.

MR. C. L. YORK: Mr. Chairman, Ladies and Gentlemen: I shall waive all remarks in order to get right at what I think is the situation in regard to the responsibility of being a foreman. Mr. Hamilton seemed to have struck the keynote of the situation but there is another point which should be stressed, namely, the method of instruction that the foremen should give to his men. The foreman, above all others in an industrial organization, can put oil or grit in the bearings. Some person or persons must issue orders, make decisions and carry out the policy of the company and, so far as the manual workers can see, that man is the foreman. The foreman hires the men, discharges them, plans the work of his department in whatever way he believes will produce the best results. He is the man who voices the policy of the company. If the company is to have the good will of the employees, it is for the foreman in many respects to encourage it, he is responsible.

One of the principal qualities the foreman should cultivate is judgment of human nature, and be able to use his judgment in selecting the men who are best suited. Another important factor is to adapt yourself to the ways and methods of the different men. You can't handle men along the same lines, and things will appeal to one man that wouldn't appeal to another. Some always have a grievance either about some workman or working conditions; some are easily affected, and others are too friendly or familiar with the wrong kind of conditions and it often becomes a difficult problem to get the cooperation of every worker.

It is the foreman's duty to listen to the troubles of his workers, and try to point out or devise some way, either to overcome it or get around it. In other words, the foreman must act as a mediator and establish a bond of union and interest. He can obtain greater results, in giving orders or instructions about the work to be done, if this bond of union and interest exists. It is a task and a difficult one, because they fail to recognize the necessity of thinking in terms. That is, he fails to take into account the fact that he has a broader experience and knows the details about the work more than the men. Therefore, problems that are very easy for him to understand may be difficult for the man to learn, particularly a new man.

A great many workers are afraid to ask questions for fear they will appear ignorant of the work, or stupid. So, when the foreman gives his instructions about how a piece of work is to be done, the man says he understands whether he does or not. Very often the workman will say he understands and he really believes he does, but the foreman has given him instructions about so much work that he becomes confused and can not remember every detail, and, rather than ask the foreman to go over the work with him he will take a chance and go ahead with the work on his own account. It depends on his training and experience whether the job is done correctly or not.

If a worker learns that he will not get a call down just because he truthfully states he doesn't understand what the foreman has said, his respect for the foreman and company will be increased. This is a beginning of that rare quality, loyalty.

The foreman should not look at the job from his point of view alone, but he should also analyze the workman's point of view in order to do the job effectively. The knowledge that the man must have may be of various kinds, he must have the required amount of skill to do the job. If he has not, the work will not be done correctly or he will spend entirely too much time on it. Trade terms or names, and something about the working property of the stock which he is to use, tools and equipment, and also just what he is to use and how he is to perform the tasks — all these need to be explained by the foreman before he can expect him to do his work successfully. If the instructions are complete and the workman understands them the work will be done effectively. If the instructions are incomplete, the production will be held up, the workman will lose interest and become dissatisfied.

Each trade has its own tools, own processes, own methods and own terms. An acquired judgment in proper tools, for a given job is necessary and if he has good judgment, he is rated as a good workman. For the foreman, the general rule to be followed is to give the simple ideas first and more complete detail later. When a series of operations are included in one job, those doing the secondary operations should be given special caution and information as to minor details. One of the most common causes for dissatisfaction is the foreman giving too much information at one time, especially to new men. The foreman should give his instructions clearly and demonstrate the operation. It is the problem of the foreman to see that each man performs successive operations correctly, and the man will understand the instructions better because he can see the application of the instructions which have been given.

There are two principal methods of giving instructions. One is the oral method, in which the foreman tells the instructions. When instructions are

given in this way the chief faculty of a man is a good memory; he can get the instructions all right, but if he can't absorb them and recall them he will not be able to do a good job. The information method, where the work deals with simply telling a man how to do a certain thing and where little trade intelligence is required, is far better used in simple operations rather than in complicated jobs.

In handling a job by the development method, the foreman helps the man to think out the problem and guides him when he is stuck. The object of the development method is to train a man to think intelligently about his job. The foreman helps him by successive steps to reason, or to think through to the desired results. This is a training process and can be used for many classes of industrial workers, and it helps them to use their own ideas. Every time a job is handled something has been added to the man's capacity to think for his job, and to think the details through correctly. Hence, the use of this method by giving instructions is of great value in much of the work in the trades.

REMARKS

MR. CAMERON: Any questions you have to ask Mr. Hamilton on this subject?

MR. R. M. LITTLE, Safety Institute of America, New York City: Mr. Chairman, I think it is about time to say something about the advantages of being a foreman. We have dwelt upon his responsibilities and his duties; we have analyzed the job; we have impressed him today with the necessity of his being the key man of industry for the sake of production, and about everything else. Some foremen are thinking we have invited them here to give them this harangue, line upon line, and precept upon precept and a good many of them will go away and say, "What is there in it for me?"

I want to say this, just before the next speaker, there is a great deal in it for you to be a good foreman and to succeed as a foreman in the relationship which has been discussed here today. It makes you indispensable in industry and gives to you a great American opportunity of advancement. You have a chance to become a superintendent, a general superintendent, a manager, a director, and president of a corporation, for that is the American way of doing things. The man who can master a job all the way along and know everything in it is the man that is going to be promoted. As these papers were being read, I thought how widely that principle applies in life for successful men everywhere. Napoleon was first a corporal; Grant was first a lieutenant; Joffre was first a lieutenant, and George F. Johnson, of the Endicott, Johnson Company was first a workman, and a foreman, and today he is one of the finest and most successful industrial leaders in America.

Foremen, and those in touch with foremen, let us point out their opportunity for advancement by being good foremen.

MR. CAMERON: Our next paper will be the address on the subject of "What the Foreman Can Do to Promote Americanization" by Mr. Peter Van Geyt, of Rochester.

WHAT THE FOREMAN CAN DO TO PROMOTE AMERICANIZATION.

BY PETER J. VAN GEYT, LABOR MANAGER, JOINT LABOR BOARD, CLOTHIERS' EXCHANGE, ROCHESTER, NEW YORK.

MR. CHAIRMAN: By way of introduction I should like to read to you a paragraph or two from the introduction to Cyril E. Robinson's survey of industrial and economic problems. The name of the book is *New Fallacies of Midas*. Sir George Paish wrote the introduction and is familiar with conditions in the various countries.

Of the many objects for which this war was begun it is now beyond question that the main one was the preservation of military autocracy in Germany and in Austria. It is now equally evident that of the many consequences of the war the chief one will be the emancipation of democracy, not merely in Germany in Austria and in Russia, but throughout the world.

In Russia where events have moved faster than elsewhere, revolution is already well on its way to its final stages. It is true that so far a bureaucratic autocracy appears to have been merely replaced by an oligarchy. Nevertheless the eventual introduction of democratic government is not much in doubt, and it is probable that the people of Russia will for the future control their own destinies by means of small republics for local matters and of a federal republic for national and international affairs.

In the Austrian Empire revolution and dissolution have taken place and probably somewhat similar conditions to those prevailing in Russia will be witnessed both in Austria and in Hungary in the early future. Small local republics are likely to be found and eventually some kind of federal republic including the greater part of the existing Austrian Empire together with some of the Balkan States, will probably emerge from the chaos.

In Germany the revolutionary movement towards democracy is causing great uneasiness to the enemy government, and there are strong reasons for expecting that before many days pass by, the militant autocracy of Germany will be forced to yield to a democratic republic.

In periods of transition disorder can not always be avoided, but as soon as public opinion becomes convinced about the right course to pursue, and democracies mobilize their power, there is far less danger of disturbance and of any breach of law in the democratic nations than in autocratic states, where the interests of the people and of their rulers are divergent. Therefore, after the period of transition that must inevitably follow upon the conclusion of peace, in which the autocratic nations will become democratic and the democratic nations more democratic, there will be less danger of disorder throughout the world than there has been hitherto. For all practical purposes the danger of democratic nations acting unjustly or failing to maintain order and respect for law, or refusing to honor their obligations may be completely disregarded. The rise of democracy means a high standard of honor, the recognition of justice, the observance of law and greater security, both for life and for property.

Americanization has come to have a variety of meanings. In its limited sense it means the teaching of the English language to the foreigner who has come to our shores. In its broader sense it is the sum total of all those activities which bring about the absorption of the foreigner so as to make him an indistinguishable and acceptable member of an American community. It is the proper total effect of activities upon the foreigner which prevents him from growing into a Bolshevistic radical. Industry, through the foreman, its agent with whom we are chiefly concerned today, has an important relationship with the problem of Americanization regardless of whether we consider the problem from its broader or narrower aspect.

Though the teaching of the English language is a limited means of Americanization, it is yet the cutting tool of effective Americanization. However, it is simply a means to an end and not an end in itself. Because the foreigner passes the more important portion of his time in industry it evolves that the properly cultivated industrial atmosphere is that force which puts the effective cutting edge upon this tool. Because industry can play such an

important part in Americanization, industry therefore owes an obligation to the nation to contribute its whole-hearted support toward any Americanization program. In making such a contribution it necessarily means that it also renders itself a service through the medium of a greater productive return.

No matter how elaborate or carefully worked out the policy of a company may be, such a policy will not succeed unless it has been sold to the foreman. The employment department or any other general supervisory department may institute any and all the plans in the world to promote Americanization in its plant, but all such efforts will be useless unless the successful co-operation on the part of the foreman has been obtained. It can readily be seen, then, that *no policy which may be laid down by any employer is broader than his foreman*. The foreman is most certainly the real force in any industrial atmosphere. To the man on the job, the foreman, his immediate superior,—the man he takes orders from,—represents the company's policy regardless of what may be in the mind of the employer. This is especially true of the foreigner, to whom the foreman is a standard-maker of Americanism.

THE KEY PROBLEM — SELLING AMERICANIZATION TO THE FOREMAN.

The real problem in Americanization, therefore, is getting it across to the foreman. How is this to be done? Obviously, the result cannot be obtained by calling the foremen together at a meeting or by sending them written notices in the form of a mandate or proclamation telling them what they ought to do. Such a procedure, rather than obtaining the desired results, must necessarily be doomed to failure before it has even been put under way. It is as natural as water running off a duck's back for a human being to oppose a mandate. His first impulse is to try and find a way in which he can dodge an order which has been issued. Rather than issuing a proclamation, the idea must be put across in another way. I am reminded of an experience I had in serving under a superior of mine some time ago. I worked with this man for over two years and never during this time did he ever directly tell me to do any one thing, and yet there has never been a man who succeeded in getting me to do a greater variety of things than this man did. The secret of his success lay in the fact that he never issued an order for me to execute. Rather than doing so, he got the things he wanted done across to me through suggestion or a discussion of the problem at hand in such a manner that I really thought I was having as large a part in carrying out new phases of the work as he was himself. The truth was, however, that practically every new idea came from him. He had the happy faculty of putting them across to me so that I thought I was doing my share in initiating the newer phases of the work.

The plan of procedure in selling Americanization to the foreman which I would follow would be roughly, something like this: The first thing I would do would be to seek out a few more representative foremen in the plant, who had come to America as foreigners and who had gone through the experience of Americanization. Surely, every plant has one or two such foremen. I should question them individually as to their primary American industrial experience, find out the difficulties they were up against in becoming Americanized, and find out what agencies were of greatest assistance in making them acceptable as Americans. I would then carefully note those agencies or

experiences which had been of material assistance to them, and also the difficulties which these men had come up against. After having made such progress I would single out the individual who had given me the best set-up of his experiences and urge him to state them before a meeting of the foremen to be called. When I had succeeded in going through these preliminary steps, the time would then be ripe for calling a preliminary meeting of the foremen. In calling them together I should point out their relationship to this problem of Americanization from at least three standpoints:

First, from the standpoint of the foreman as an individual. I would point out to him the constant inconvenience he was suffering in attempting to transmit instructions to an operator who little understands the English language and American customs. I would point out to him the relationship such difficulty would have toward the retaining of American help, and that the longer the inconvenient situation was permitted to remain the greater number of American help he would be apt to lose, until finally his entire force would tend to be made up of foreigners, and that in such a condition it would become more difficult for him to issue instructions which were understood. He would therefore find himself at the end of the day pretty well worn out and impatient, and instead of coming home with the feeling of a real man having done a real day's work he would be pretty apt to come home with a deep seated grouch.

After pointing out the effect on him as an individual, I would then attempt to relate the problem to industry from the standpoint of production. It could be made quite obvious to the foreman that the foreigner who cannot understand instructions correctly could not possibly become as dominant a factor in production as an American who can understand. It would mean that often because he did not understand instructions he would spoil quantities of work, and that he would necessarily lose a great deal of speed because of not being able to understand how things were to be done, and so on down through the list.

I would, thirdly, appeal to him from the standpoint of his obligation toward the nation and the place that any red blooded American must take in a problem of this kind. I would point out to him that the progress of the nation depended upon the sum of the efforts of all individuals, and that anything which could be done to elevate the individual must necessarily elevate the nation.

Having briefly outlined the proposition to the foremen, I would seek an expression of opinion on their part as to how they would go about solving the problem as it relates to the shop. I would question them as to whether there was anything they could suggest in the way that a foreman could help in such a program, bearing in mind the fact that as the foreman is the man who comes more closely in contact with the foreigner than any other man in the plant, he could give the greatest amount of information on a program of this kind. Here, if expressions are not forthcoming immediately, I would use in a suggestive way the material I had gained from the individual conversations, seeking their opinion upon a point or two. In this manner it would probably be easier to start the ball of discussion rolling.

As the discussion brought forth suggestions, these should be tabulated for use in the actual work. As enthusiasm grew and the foremen became more interested in the proposition, the suggestion would then be brought to them

that they as a group bring about some concerted action in developing a program for Americanization. In doing so, it would be well to dwell upon the importance resting upon them of cultivating a sympathetic attitude on their part as related to this program. It should be pointed out to them that it would devolve upon them to cease doing a good many things which were being more or less thoughtlessly done in their relationship to the foreigner, and that instead it would mean doing constructive things. No longer could anyone tied up with such a program remain indisposed to place themselves in the foreigner's place. From this point on it would be necessary for the foreman to look at things through the eyes of the foreigner. He must learn to see things as a foreigner sees them. Attention must also be called to the importance of assuming an attitude of patience in the issuing of job instructions. *One of the greatest principles of Americanization is teaching the proper receptive attitude on the part of the foreigner.* This, it is obvious, cannot be done if he is ordered to do something in a peremptory manner, or is not given sufficient detailed explanation when instructions to do a job are issued to him. Instructions given which are not understood or which are handed out in a peremptory fashion result in inefficient work, production suffers and failure after failure results from such a state. Instead of the feeling of friendly co-operation which should exist between the foremen and the men, one of mutual contempt for each other grows up, until ultimately a breaking point is reached.

In order to form a constructive organization from the group of foremen, suggest the formation of a central committee of foremen, and call for volunteers to serve on such a committee. If such a step has been managed properly beforehand, it will be quite possible to have on this committee the interested representative foremen mentioned previously as having gone through the process of Americanization. It will also be possible, if the proper suggestive methods are used, to see that the right man is elected or appointed chairman of this committee. Careful work in the preparation for the appointment or selection of the chairman cannot be over-emphasized, for the programme is very apt to succeed or fail, depending upon the type of foreman selected.

THE FOREMAN AND THE TEACHING OF THE ENGLISH LANGUAGE.

When the proposition has been sold to the foreman, the first real step in the Americanization programme will be the formation of classes in English. It is quite obvious that these classes must necessarily meet in the plant, in order that the greatest number of members may be enrolled. Classes in the evening hours, in night schools, Y. M. C. A.s, and other agencies, suffer under a great handicap almost impossible to overcome. The foreigner, after he has worked in the plant through the entire day, is little disposed to get into his better clothing in order to attend an English class. Often the place of meeting is a great distance from his home, and as a result the time consumed coming and going becomes a factor in lowering his interest in the class. The place in which the class is held is most likely to be a strange one to him and with his natural timidity of strange places it is oftentimes quite difficult to persuade him to attend. In the plant, however, all these difficulties and many others are overcome. Because of the economic necessity he has already learned to consider the plant as the place where he must of necessity pass the greater portion of his daylight hours.

The foreman's relationship to the class for the purpose of teaching English can best be that of a co-operative nature. The ideal teacher for the class would be someone from the plant who has a practical viewpoint. While the foreman could often fill such a position, in doing so he fills it as an individual and not as a foreman. The customary procedure has been to obtain the services of someone from the outside. In most instances, teachers from the public schools, the Y. M. C. A, or other agencies have been used. The great difficulty resulting from such a relationship is that such teachers do not have the practical shop attitude. They often look upon English primarily as an avenue toward cultural citizenship only, instead of considering it as the medium of a practical, economic and industrial asset. As a result, a foreigner has often received standards of citizenship which he has found impossible to attain when he has bumped up against the stern reality of industrial life. To his sorrow, his experience is more likely to be quite different from the idealistic Americanism pictured by his teacher, and which, because it often appears so rosy, he had swallowed in its entirety.

The Carpenter Steel Company of Reading, Pennsylvania, has hit upon the idea of the joint teaching force. The company inaugurated its Americanization work by having its first class taught jointly by a high school teacher and a general foreman. The general foreman was weak on English but he was strong on having obtained the respect and confidence of the men. This confidence he had obtained because he had intelligently shown a real interest in the men under him until they came to believe in him as their friend. On the other hand, the attitude of the men toward the high school teacher was antagonistic and even contemptuous. There was no bond of sympathy existing between them because he did not understand them and they did not understand him. The presence of the general foreman, however, who worked with the teacher, soon broke down the feeling against him. The foreman assisted the teacher in obtaining the workers' viewpoint, and because of the interest the men had in him, he was able to convince them that the teacher was their friend and was willing to help them to the best of his ability.

The important factors in the teaching of English where the foreman can make a contribution are, first, acquainting the instructor with shop practice and terms. The teacher could well be taken in hand by a foreman and be made acquainted with the manner in which the shop works. He could learn something about the methods used, the tools necessary, and other phases concerning the general atmosphere of the shop. The foreman could be of material assistance by suggesting a vocabulary of shop terms such as used in the job instruction cards, the manner of obtaining materials and tools, and other equipment, etc. Bearing in mind that people are essentially eye-minded and that the vast majority of the knowledge which we obtain comes through the eye, rather than through the ear by means of the spoken word, the foreman can be of great assistance to the teacher in getting English across to the foreigner, by furnishing exhibits and objects from the workroom, such as the teacher could use in connection with the lesson material. By having these objects an intelligent teacher could very easily use a simple dramatic form of teaching English in the class. For instance, he could appoint a member of his class as a foreman, another as tool clerk, another as a workman, and so on through the list, and have the various individuals attempt to imitate and take the part of the individuals whom they were supposed to represent.

In this way a greater effort would be stimulated to learning English as necessary for the work in the shop.

The foreman can make another very important contribution to the progress of the English class. All that is necessary for him to do is to show an interest in the workers' efforts to master English. After a worker had attended the class he could ask him questions about his progress, show a friendly interest, and encourage him by complimenting him upon any progress he was making. He could go even further than this. He could attempt to obtain the worker's reaction from the class, and impart to the teacher such knowledge gained in the form of a suggestion as to how to overcome any of said worker's particular difficulties. The foreman can be of assistance to the teacher in still another way. He can follow up the instructor's efforts in the class by tactfully correcting the use of English on the part of the foreigner, this to be done in his necessary conversation with him when giving working instructions. Such cooperation can be carried forward to real progress if the foreman keep himself in touch with the particular lesson material for each meeting of the class, and make a conscious effort in giving instructions to link the two together.

CREATING A PROPER ATTITUDE ON THE PART OF THE AMERICAN WORKER TOWARD THE FOREIGNER.

Breaking down the resentment which the American worker holds toward the foreigner because of provincialism or because of fears that he may be dragged down to the economic inferiority of the foreigner, or because the foreigner appears to him uncouth, because his actions are strange and not understood, is where the real test of effort comes as to whether the foreman is getting the Americanization programme across in his department. It is not the English which is taught which Americanizes. The real test is, does the foreigner become one of the bunch? If the balance of the workers in the shop can be stimulated to treat a foreigner as an American and act toward him as though he was one of them, he very soon becomes an American. In the minds of the balance of the workers the prime reason that a foreigner is treated as such, is because to them he is different. Overcome the idea in the minds of the other workers that he is different, and substitute therefor the thought that he is a human being, moulded from the same stock as the rest of us are, and he soon loses his customary appellation. The programme on the part of the foreman in creating this proper attitude among the balance of the workers consists, first, as has been said before, in ceasing to assume our customary attitude toward the foreigner and attempting to break down this same attitude in the minds of others. He can only break down the attitude held by the balance of his workmen, first, by personal example, and, secondly, by constructive suggestion. A foreman committed to a programme of Americanization must necessarily himself refrain from the use of such appellations as "Wop," "Ikey," "Hunkey," "Dago," "Polack," "Spaghetti," "Swede," etc., and then stand firmly but tactfully for not permitting other workmen under his supervision to use such terms. He must neither do so himself nor permit others to say that because the foreigner has difficulty in doing things through misunderstanding or ignorance, he has not the same rights in the shop as an American, and that he must not be told to do things regardless of any objection on his part as a result of misunderstanding, and that if he does

object usually for some perfectly good reason, not to be told that he is not wanted and that if he does not like things he can get on board a ship and go back home.

It will be up to the foreman in encouraging his workers to treat the foreigner as an equal, to tactfully suggest to his American fellow-workers that they need only trace back their family history a generation or so to find that their ancestors were in the same identical position that they now find these foreigners, and that if their ancestors had been continually treated in the wrong way, they could not themselves be advanced to the place where they are considered as acceptable Americans. The foreman can then very well suggest that therefore, instead of ridiculing these foreigners, American workmen owe it to these new comers to assist them in correcting their imperfectly mastered American language and customs. Further, that they are under obligation to the stranger because it devolves upon them to assist in discharging the debt incurred by their ancestors for the help that had been given these ancestors and which their ancestors themselves never could repay.

Another step that can very well be taken on the part of the foreman is to encourage an American workman or a well advanced foreigner to accept as his protégé a newcomer when he comes into the shop. Making use of the further advanced foreigner as an agency for Americanization is a powerful one which has long been neglected. The foreigner who has gone through the process of Americanization, and who knows all the difficulties—and also the joys—in reaching such an acceptable state, is apt to be enthusiastic for America, and in most cases sympathetic toward assisting the newcomer in attaining the coveted position he now holds.

The protégé plan has another very important adjunct for Americanization which has not been freely cultivated and in which the foreman can play as big a part, if not a bigger part, than anyone else can. The force of a statement once made by my psychology professor to the effect that we are the greatest of imitators of those people whom we consider our social superiors was never fully realized by me until I studied somewhat the problem of Americanization. The incident which forcibly brought his statement to my mind was to learn of the constant stream of people moving to the uptown districts from the East Side of New York. Why was this stream constantly moving to the North? Simply because the East Side foreigners had learned to imitate the Americans with whom they came in contact, and when the lesson had been learned the East Side no longer could hold them, for there it was not possible for them to fully carry out the process of imitation. Consequently the movement uptown, where they could further imitate Americans and become accepted as one of them.

The American worker or the further advanced foreigner, in accepting the new comer as a protégé, becomes a powerful influence for Americanization in introducing the new comer to the ways of the shop. The best results can here be obtained by carrying out this programme in a similar manner to the one in which a person would introduce another to his home. Make the newcomer feel at ease. This means that a friendly attitude is necessary. By a close follow-up of the foreigner as he makes use of the washrooms, the lockers, his conduct in relation to factory hazards as they relate to injuries to himself or to other workers in the shop, and countless other phases of shop life, may be emphasized. In addition, in those plants where there is a plant restaurant,

another wonderful means can be utilized toward Americanization. The plant restaurant is one of *the* places which exert the most powerful influence toward Americanization. The conquest of American food over the chunk of bread of the foreigner, and the cultivation of the proper manner of consuming this food at one of the restaurant tables, as compared with the huddling in one of the corners of the shop and consuming the chunk of bread and the cold coffee is one of the quickest acting forces toward overcoming the resentment which the American workman holds toward the foreigner and bringing about the full acceptance of that foreigner into the American industrial household.

All of these minor points, more or less inconsequent when taken individually, collectively exert a powerful influence in developing a friendly family spirit in the shop thru tending to put down the antagonism usually resulting from mutual misunderstanding. The protégé plan can also be used to prevent the foreigner from being victimized by shyster lawyers, loan sharks, and from some of his own unscrupulous countrymen who prey upon him because of his ignorance of American procedure. This phase of the protégé system cannot be emphasized too strongly because already far too many foreigners have received their primary schooling of Americanization from the hands of such American scum. Under such conditions, we can hardly blame him for entertaining a very unflattering conception of the "Land of the Free."

THE SOCIAL RELATION.

In those plants where there is no definite agency to conduct and co-ordinate the social activities, such as plant amusements, various forms of recreation and athletics, the foremen's association can be of material assistance in stimulating the formation of such an agency. If the service department already exists, and the agency for social relations in the plant is functioning, the foreman can play an important part in this form of Americanization by either himself urging participation in the various activities, or through the adviser who has been linked up with the newcomer.

The foreman or the adviser can exert a far greater influence upon a man in obtaining his participation than anyone in the service department possibly could, regardless of how efficiently such a department may be functioning. The foreman, again either himself or through the adviser, because of the close association in the workroom, need expend only a small amount of effort to learn of the talents which the foreigner may possess. Once these have been learned, only a small amount of personal urging need be brought into play to bring about participation in the plant's social activities by the foreigner.

In making up social programs the plant agency conducting same can be greatly assisted by the foreman by being advised of the musical talents, national dances, national games, etc., with which the foreigners are so often familiar. By stimulating such means of self-expression, placed before the workers of the shop in general, a great deal can be done toward breaking down a feeling of resentment. Everybody appreciates and admires a man who can do things. Two illustrations of the ability of foreigners to do things come to my mind. The first one is of an Italian who knew but little English but who in his own country had become an efficient soccer player. Through the efforts of his foreman he was induced to try out for the plant soccer team, here he was participating in a language in which he could be fully under-

stood and in which he could easily understand the other members of the team. Joe, as inside wing, was a powerful asset in the offensive work of the team and his efforts counted for many a goal scored. To his fellow teammates and to the people in the shop, who closely followed the team, Joe was an accepted American in spite of the fact that he had been in this country only a short time and could speak only a few words of English. He was an American because he was accepted into the general group as a result of this ability to do things.

Another similar instance is that of a young Italian who had obtained efficiency in baseball. He had developed into the shop team's dependable pitcher and from the time in the early portion of the season when he struck out two men in succession after two others had managed to get on base, he was an American. A "wop" who can strike out an opposing batsman is no longer a "wop."

PROMOTIONS.

The matter of promotions in its relation to the foreigner is another phase of industrial life where the foreman can play a most conspicuous part in the Americanization program. Here again he can be a force for a great deal of good or can bring about a great amount of harm. In order for him to do his share in Americanization, the responsibility rests upon him to show as much interest in the work of the foreigner as he does in the efforts of the American worker. He must reward proficiency in effort on the part of the foreigner in exactly the same manner in which merit is granted the American. If this is not done, the foreigner becomes impatient and leaves the job often to join the group of industrial tourists who migrate from plant to plant. Usually his place is filled with a more unintelligent foreigner, a bad effect is produced upon the remaining workers, and thus the whole personnel of the shop tends to drop to a lower level. By rewarding a foreigner for all the effort he puts into his work, and by using such procedure as a stimulus for other foreigners to attain better workmanship by pointing out to them that if they can put forth the same effort as the first foreigner who has been promoted, they too will receive promotion, a great factor in establishing greater production can be brought into play. Holding down the foreigner who is able to fill a promotion which he deserves is one of the best ways of breeding discontent and Bolshevism, especially when the foreigner finds that the chief reason why this promotion was not forthcoming to him was because he was looked down upon as being a foreigner. A foreman will do well to remember that *the wildest fanatic for America is the foreigner who has been given a chance.*

AMERICANIZATION AND SAFETY ENGINEERING

It is hardly necessary for me to point out to a group of safety engineers the important connecting link between Americanization and safety engineering. All that it is necessary for me to state, in order to link this program with the foreman's part in Americanization, is to refer to the report for the year 1916, as given by Mrs. M. K. Clark, chief investigator for the Bureau of Industries and Immigration of the New York State Industrial Commission. She reports that in seven out of every ten of the 58,500 case of compensated accidents occurring in New York State during that year the services of an interpreter was necessary. I can well bear out the truth of her report by per-

sonal observation of the activities of the Rochester office of the New York State Industrial Commission, which happens to be on the same floor as my office. Here every day as I pass by when hearings are held, I cannot help but notice the preponderance of the foreign element. I believe that while Mrs. Clark's figures are accurate they do not tell the entire story, and that the preponderance in accidents is greater than seven out of ten, as the New York State records indicate, because many foreigners fail to make compensation complaints, due to ignorance or due to fear. All that is necessary to say is that the foreigner has swollen the compensation lists, not because he is indifferent to pain or to the economic loss of injury, but owing to his lack of Americanization. The foreman can be of tremendous assistance to the safety engineer in this Americanization project of safeguarding life and limb. Give the foreigner the same consideration and stimulate him to the same safety measures as placed before the American and our compensation lists will be measurably reduced. In fact, because of his lack of understanding of the dangers involved in discharging his industrial duties, he should receive just a little bit more attention than the American. If safety attention is not given him he soon leaves for a job where the risk of personal injury is not so great, and as a result his place is filled by a more ignorant man whom the foreman must look after.

THE SENSE OF FAIR PLAY, SPIRIT OF JUSTICE FOR ALL REGARDLESS OF RACE

In summing up, let us place emphasis upon the place the foreman holds in the shop as an exponent of law and authority. As a result of such position, in the mind of the foreigner he is not only an exponent of law and authority for the shop alone, but an example of the law of the land. If he uses his authority tactfully and properly and justly, industrial co-operative effort results, an active Americanizing agency is set up, and individuals, industry, and the nation, obtain the advantages derived therefrom. If he wields his authority, as did the Czar, a chaotic Russia is sure to result sooner or later. On the basis of the use of this authority, another definition of Americanization, adapted from the Golden Rule, can be formulated. Give unto the foreigner a square deal as you would have others give unto you, and in doing so remember that no man ever did another man a good turn but what he profited more by doing it than the other man did.

DISCUSSION

MR. CAMERON: Mr. John J. Blackford will open the discussion.

MR. JOHN J. BLACKFORD, National Conduit and Cable Company, Hastings: Nearly every speaker today has agreed that the large industrial enterprise is built on the order of a military organization and around the noncommissioned officer, and that the foreman represents the noncommissioned officer. We have harped along on the noncoms all day. Any of you had any military experience? If you have, you know the organization is not built around the noncoms, but it is built around the orders issued by his superiors and carried out by himself.

Much has been said here about the Americanization of the foreigner. Nearly every foreman has had his difficulties with trying to bring a foreigner in

amongst a lot of American workmen. They have made it so uncomfortable for the fellow and he has said, "Can't you transfer me to some other job? I can't stand it. I'm tired of it." And the consequences are that he has built up a little group of foreign speaking fellows in one of these departments. In many cases he has to put some man over them that can talk their language so they can understand. They don't get a square deal from the American fellow who works alongside of them. It is hard to get an American fellow to work alongside the Polack, the Italian — they don't want it, they take every opportunity of making it uncomfortable for them. The foreman may try his best, but he can't disrupt his organization because of one Russian, one Polack, or one Italian who happens to come in.

We have found that you don't have so much trouble with the Italian assimilating with the American, as you have with the Polack and Russian. The Italian seems to assimilate American ways quicker, he wants to become an American citizen, that is the height of his ambition. Nine times out of ten they want to stay here, the other fellow who hasn't that ambition desires to earn enough money when things quiet down in Europe to go back where he came from.

In our immediate locality we are dependent largely upon the foreign element for labor. The consequence has been that in many cases we have had to make a foreigner a foreman to be able to get along with the men. Our problem has not been to Americanize the workman, but the foreman, because we had to make a foreigner a foreman.

It has been said here in regard to the teaching of the English language, that that is the keynote in Americanizing these men. Unless you have something else besides simply and purely teaching them the English language, the men get tired and drop away from your classes. Go over to New York City, the most successful attempt in Americanization of foreigners has been where a short time has been devoted to the teaching of the English language; they have been taught history, geography, arithmetic in their own language, giving them some other incentive besides mastering the English language. We are going to try that out in our community amongst our men. I don't know how well it will work out, but we are going to try it out and I think it is well for them to be taught English, but if they can be taught history and the other things in their own language while they are assimilating the English language, I don't believe you will have nearly so much trouble. Your foreman can do much to prevail on these men to join these classes, and to tell them that they themselves are not antagonistic to the foreigner but want to help them and make them good American citizens. The average foreman does that.

GENERAL DISCUSSION

MR. HARRY ROTHSCHILD, Mercantile Inspector, State Industrial Commission: I have my doubts about a man caring to dress up after going home, and go back to school. I would like to ask Mr. Van Geyt what time he intends to have those schools?

MR. VAN GEYT: In our industry the work closes at four thirty, so the problem is a simpler one than in some other industries. Those which are believed to be more progressive take an hour out of the working day. At the National Carbide Company in Cleveland, they have gone on the plan that

the first hour of the day is the time to teach English to foreigners, believing that that is the time of the day when his mind is fresher and more receptive. As I understand it, they tried it out at the end of the day and it didn't meet with any great success. But now, as I understand it, they are meeting with considerable success as a result of having put their classes at the beginning of the day. Naturally it is done on company time, it isn't charity, it isn't welfare work, it is a business proposition, and you get every cent that you put into it.

MR. ROTHSCHILD: That is interfering with production; everybody wants stuff turned out.

MR. VAN GEYT: Wouldn't it interfere more with production when you have a man who doesn't understand things? If you cultivate the proper atmosphere and educate them, isn't it worth while to put an investment in that? You will reap your investment.. Isn't it better to do that than to drag along years with a man who is only fifty per cent as efficient as he might have been if you had taught him the English language?

MR. ROTHSCHILD: A lot of them don't care about it, they want the stuff turned out.

MR. VAN GEYT: That is the very reason why I am suggesting that they give an hour for their English lesson. For a period of twenty or thirty lessons, those twenty or thirty hours would be as good an investment as could be made. The idea is to sell that to the manufacturer.

MR. THOMAS STANTON, Aluminum Castings Company, Buffalo: The speaker has brought out the point of assimilating the foreigner into our American life. The foreigner comes to our shores with a well rounded existence according to the traditions and customs of the land from which he comes. It doesn't fit into our American life, that is true. Yet, he feels constantly that the things he did in the old country are the best. Naturally so. The foreman seems to me to have a great opportunity in bringing out those things which the foreigner holds dear; showing an interest in the customs of his native land, and then in little ways showing to the foreigner how American life holds things which are analogous, and which will be just as interesting to the foreigner after he has found their value.

In Pittsburgh among some of the foreign communities they have very highly developed activities, just as the foreigner would have in his own land. Through that expression the foreigner finds out how little they fit into American life; next he becomes acquainted with the things Americans do which are similar, and you can see that the process from changing over from the old to the thing that is going to make him fit in better to our American life takes place very naturally and very easily.

MR. CARTER, Union Carbide Company, Niagara Falls: It seems to me in attacking the problem of Americanizing the foreigner it has taken one side only. I have had experience in the schools of this country and in the industrial work, and if you are going to reap real results you can't attack the proposition through one or two shops. It is a movement which must be widespread. One manufacturer spends his time in classes, we have done so at our plants. There are other plants at Niagara Falls that have done the same thing.

It seems to me the way to tackle that proposition is unified movement with the city, town or village. One plant can't do it alone, but if you have a Chamber of Commerce, or Industrial Commission (or whatever you may have which can handle it) if you will get a unified movement, work it up properly with the school authorities and the foreign societies, through their churches and own organizations you will get the foreigner interested. Then get the idea to them through the foreman in your plant, work up a real interest and you will get results. But each plant can't make a success of it handling it alone.

MR. VAN GEYT: I would like to say a word in regard to this by telling of a parallel case in the industry, the clothing industry, with which I am associated. We had been going on training people in a sort of haphazard way, not watching them, and the habit has been to keep them on low wages for a considerable time, even after they had learned to do things, in order that the men might make up the money used in the process of learning. We found that after we spent three or four or five months teaching that operator how to do an operation, suddenly he disappeared for the simple reason after the operator had learned how to do things and couldn't get the wage he was entitled to, he went somewhere else where he could get it. I don't know what the difficulty was in the plant of our friend from Niagara Falls, but that has been a problem with industrial Americanization. We have gone to some trouble to get people to learn our American ways, and then we have not moved them forward in the same way in which they have assimilated our manners and customs. I tried to bring that point out and that the foreman and plant must treat the foreigner as a man. The day of exploitation is past. Immigration has been shut off, and he can't do it any more and the quicker we do things to hold people after we have done those things for them the better off we will be.

MR. L. B. WYCKOFF, Union Carbide Company, Niagara Falls: This morning I brought up this question of dealing with foreigners. Subsequent speakers made me feel somewhat chastised, and this afternoon I feel somewhat vindicated. But there is one question yet in my mind, how are you going to get around the fact that a foreigner, when he first rises to a position, gets a swelled head—as we call it—thinks he is better than anybody else; thinks he is better than an American? He is apt to spread discord among the men because he thinks he does not get promoted as fast as he ought to.

MR. VAN GEYT: Isn't that a result of a cause? May be one of the chief reasons why we have experienced that difficulty has been because either our attitude, or the attitude of somebody else, in the beginning toward that foreigner has not been quite what it should have been. Therefore, when the time comes when he has learned a little bit about our customs and ways, he is going to take it out on us and get even with us for the thing we tried to put over on him. Isn't there some reason to that? There is a great deal of that existing, I don't say it is the only cause—there are peculiar individuals, regardless of how much you might do for them, who wouldn't appreciate it and would act in the manner which you state.

Generally speaking, I think you will find if we would treat them right in the first place they will come across. Believe me, there are few men in the world who don't appreciate a square deal and will come back at you in the same way. If you do the right thing by them they are going to come across and do the same thing to you.

WEDNESDAY MORNING, DECEMBER 3

SAFETY MAN'S DAY

PRESIDING OFFICER: R. M. LITTLE, DIRECTOR, SAFETY INSTITUTE OF AMERICA,
NEW YORK CITY.

MR. LITTLE: This is to be "The Safety Man's Day," and I presume we had better start although most of the audience has not yet gathered. But, we have rather a full and good program I think, so we will proceed with the subject.

I will endeavor to outline the subject so that those in the audience can get the thought, and if you wish to make notes upon it, it will be rather easier to follow than if the topic were announced and not the sub-divisions.

I observed these two points yesterday. Someone spoke about the factories and places of work here in New York State that one difficulty is that there are so many old buildings and old equipment. From an economic point of view the time has not yet come to tear down those buildings and reequip them, naturally there would be a good many conditions obtaining in old factories and places of employment, both as to light, ventilation and equipment that will not be in up-to-date buildings. They have not been even fully approved by those using them, and have not reached the best standards of sanitation, and even production.

Now, as a corollary to this thought there is one by Dr. Cheney, of the Bureau of Labor Statistics in Washington. He does a good deal of intensive study on accident prevention and the progress that the movement is making. We are coming to certain halts where we are pointing out where further progress is possible. Dr. Cheney is fully convinced from his study, that we have gone about as far as we can in accident prevention by the continued education of workmen, reducing accident frequencies and in some way reducing severity of rate also, but that the great gains of the future are to be gained through engineering revision and proper construction and equipment. This can be done only as we work out the old conditions, tear down old buildings, construct entirely new ones with new equipment. Only in this way can we make that full progress which is possible for us to make in this great cause.

Now, with those two facts in mind, first that we are in an old State where there are a great many properties of the old type, old construction, old equipment; and that from a business point of view it is not practicable to destroy or demolish the buildings and erect new ones and new equipment; from the point of view of some who have come to the conclusion that further accident prevention depends largely on engineering skill and revision, it seems appropriate that our discussions of today, The Safety Man's Day, should start with the basic facts of the whole problem.

The engineer and the engineer's part in this problem of accident reduction; safety to life and limb and increased production. And so we take up the subject this morning, "The Engineer's Part"—not just the safety man's part, but the real engineer's part, and Mr. Rausch, the Assistant Director of the Safety Institute of America will present the first address.

THE SAFETY ENGINEER — HIS QUALIFICATIONS AND DUTIES.

BY CHESTER C. RAUSCH, ASSISTANT DIRECTOR, SAFETY INSTITUTE OF AMERICA,
NEW YORK CITY.

Ladies and Gentlemen: I stand before you this morning in precisely the same predicament that I found myself a year ago, speaking upon the same subject. I find that frequently I have to answer letters and have conversations with people who seek to know the necessary qualifications for a man to conduct their safety work either from the standpoint of safety in a safety engineering sense, or in connection with the medical sense, or with perhaps the welfare work. When one considers a subject continually and thinks upon it, very clearly defined grooves of thought begin to develop, and it is a possible thing then to set down clearly what from his experience seems to be a reasonable definition or reasonable explanation of the work of such an individual. I am speaking now of the generally accepted term of safety engineer.

Mr. Little has just mentioned one important fact, that we have gradually seen a reduction in accident work that has brought about remarkable results; I mean a reduction in accident frequencies and accident severity. But, we find we have reached a point where apparently not much more can be done by the methods we are using and we are now faced with the fact that we have to use some other method. In connection with that we find unconsciously that the safety engineer's work is drifting much into the same field that other production work is drifting, that is, in the line of pure engineering. The war taught us that many of the things we did before the world war were done in an inefficient way, and under the stress we were obliged to discover means of cutting down waste, reducing unnecessary labor, and making our work conform to more nearly straight, sound engineering principles.

That work has been shown through such activities as those of production managers; managers of men who devote their time to selecting employees carefully and scientifically; men who devote their time to health and the conditions that affect the health under which employees work; men who route work through shops; and men who send work and material out through traffic into various parts of the country. All those things were forced upon us and gradually, as the result of about ten years' work in engineering, directed towards safety both in an educational and an engineering sense, we have come to the conclusion, forced upon us not only by statistics gathered in various ways but by our own actual experience, that we must now face this problem in a different way; we must look at it as a thing that can be handled with more or less definite laws, and as a problem following definite laws and not as something that is wholly based upon the whims and notions of people and individuals.

Some little time ago I put down in concrete form what seemed to me, as a result of studying this problem for some years, an outline of a reasonable work, education and possibilities that might concern what is termed safety engineering. Now there is no such thing as safety engineering men, or engineers who devote their time to work in safety. A strictly safety engineer is not exactly a possibility because the engineering features of safety are too broad, the knowledge a man must have of physical construction, of the working of the body, of action and thought and trend of a man's mind in its work-

ing, and an analysis of the problem he meets — all those things are part of the engineer's trade. The term "safety engineer" is really a perversion or overturning of words. A man is an engineer but he is an engineer devoting his time to and in the interest of safety.

Now, I always dislike to read a paper. I much prefer to talk to a man face to face as I would in my office, or as I would anywhere that I might meet him, but occasionally when one wants to get his thoughts crystallized and get them into shape so that they will carry the thoughts intended and not something else, it is nice to put them on paper. I always dislike to hear a paper read, but I am going to venture this morning to read a portion of a paper that I have read before, with the idea that it will give you what I consider the qualifications, the opportunities and the work that might rightly come in the employment of a man who devotes his time to this particular branch of engineering. I am recognizing the clear-cut distinction between those men who are obliged to inspect and supervise in a perfunctory way, who are not located in one spot and have not the benefit of concerted action, planned work and effective cooperation in a given industry in one place. The line between a man of that type and the inspectors and supervisors, and others, is clear. It is not my field to cover that, legitimately, that comes in tomorrow's work. What I am covering now is that type of man who is suited, or could be suited, who could step into a factory employing two or three thousand men, pick up the work and organize and carry it through in a scientific manner, and bring about results that are purely engineering, not neglecting the human side, but I am speaking of the man and his qualifications for the engineering rather than the human side.

I recognize, as you all do, the need of a consistent human attitude for an engineer when he is in a responsible position; I am recognizing the scope of work he must cover; I am recognizing the fact that he must cooperate with employment agencies, with the medical department, vocational schools — but he is a man who more and more must devote his time to production, and equipment, and operation of machinery, and who will operate the plant from the standpoint of those things that come more particularly under the head of engineering.

To attempt to deliberately define the duties which should be included as reasonable for a particular class of work or profession and to indicate the qualifications and training necessary to fit persons to perform such work is to invite endless and often pointless discussion and to bring forth statements of opinion from almost as many different sources as there are persons who hear these points enumerated. A person who takes such a step must be willing to forego sympathy with his ideas on the part of many of those whom he has previously counted as his friends and to meet vigorous opposition from them and others in whose minds he may arouse a feeling of contradiction.

The English language has possibilities of clear and beautiful definition but the unfortunate American custom of using words carelessly, of distorting their meaning and of falling into colloquialisms and superlatives has resulted in a confusion of ideas and a misunderstanding of the meaning of words commonly used by many people who do not usually give careful thought to what may be inferred from their utterances or to clearly define what they intend to be meant by the use of a particular expression. It is to clarify one such general misconception that this paper has been prepared.

No other generic term is probably more frequently used in business nomenclature or more universally misapplied in such use than the word "engineer." There has sprung up in recent years through tolerance on the part of the public and a certain gullibility on the part of many employers a tendency for men partly trained in technical matters to use the word engineer as a noun to designate themselves and to precede it with almost any adjective they choose to affix to such a noun to qualify their particular efforts.

I need only to mention the fact, to draw your attention to it, that, aside from the fundamental divisions of engineering work into civil, mechanical, electrical, mining and chemical, there often develop many subdivisions of these main groups defined by such familiar adjectives as efficiency, production, sanitary, hydraulic, safety, auto-motive, and others without limit. Many of these subdivisions logically belong under some one of the fundamental divisions with which we have been familiar for so many years. Much work classified as engineering would not, when closely scrutinized, be considered as a branch of engineering at all, although it might at times involve some engineering work and principles to some extent.

The increasing tendency for men to train as specialists in a particular type of work—in fact, our complex life makes any other course almost impossible if one would seek any measure of success—has resulted in the appropriation by these various specialists of credit for training in various branches of engineering and to set them forth in such terms that those who have not thought clearly, or been well informed, have been led to believe that the works of these men were new creations. Many employers who have sought the services of such men without careful and systematic investigation have been woefully plagued by their failure to secure the services and results they believed they would obtain. Much ill repute has been cast upon the engineering profession as a whole by these impostors and so has made the legitimate work of engineers far more difficult.

May I explain what I mean by using a single illustration? Civil engineering, in its broadest concept, primarily has to do with the design, construction and operation of work and structures necessary for the development of large land areas by such means as railroads, highways, drainage systems and sewers, canals and waterways, and the impounding and use of water for power or potable purposes. One subdivision of civil engineering has come to be known as "hydraulic engineering" and is concerned almost entirely with the impounding, conveyance, distribution and use of water. After the water has been impounded its further use is carried on under the direction of various engineers. Fire protection engineers are concerned with the development of systems of protection against fire that require the use of water largely and they frequently work jointly with another branch of engineering very closely connected with it, namely, that for supplying water for potable purposes. Again, plumbers who, within the limits of a single structure, prepare and install the conveying system for supplying water and provide for its removal as waste are in some measure engineers when they design such work as well as erect it, but of late years sanitary engineers have not only largely supplanted the plumbers (who have become more or less mechanics concerned with installation), in the design of this work, but have gone farther in this branch of engineering and are now concerned with the purification of water supplies, the disposal of sewage and the elimination of all sources of con-

tamination on water sheds supplying potable water. They have enlarged their scope of work to include, beside a knowledge of hydraulics, a knowledge of biology. The bridge designer and the designer of large steel structural forms for various purposes are members of the same civil engineering group although they have little in common with the sanitary engineer or the road builder. Different as are the problems of these various men their work is directly, when carried back to its fundamental source, a part of civil engineering.

In exactly the same way various subdivisions of mechanical engineering have developed as specialties and men who are truly engineers are engaged in most of them. Perhaps the single reason why men fundamentally trained as engineers are usually engaged in such work is because the problems are inherently those requiring sound technical knowledge concerning nature's laws and forces and much training and experience in their application to problems that arise in the work done in this world.

In the last few years a new field of work, requiring the services of men who are more or less technically trained, has grown into our industrial life. Its activities have been grouped under the generic head or general term of "safety." Like all new movements it developed as the result of an evident need but without limitations as clear and distinct as those controlling some of the other lines of engineering. This condition is largely due to the fact that safety work does not deal wholly with inanimate objects and materials whose actions can be predicated by means of cold calculations, but concerns the actions and habits of the minds and bodies of human beings in conjunction with their individual use of forces and materials controlled by various forces under the definite laws of nature. It is this element of uncertainty, this human factor in conjunction with the other forces and factors that are, or can be, guided or controlled, that has led to much of the misapprehension on the part of many employers, and the public generally, as to exactly the scope of work in safety and of the type of men who do it and who have become generally known as safety engineers.

One point here I want to speak about, not only that it shows safety engineers are like other engineers, but it applies to the particular, specific knowledge or training in his own small field. In other words, you must have a man of broad scope, a clean, clear thinking man who understands the fundamental laws of nature and who is able to analyze the situation clearly, thoughtfully and fairly; who will place those laws to work to solve the problems that are presented to him. He must also be a man who is sympathetic, kind, and honest without question; a man who can stand up and manage his men, who have absolute confidence in him, and who, because he has that confidence, can take any situation that involves men or management and always get the men and the management to see the need of a thing and get it put through. He must be a man who is able, in other words, to see his problem, study it, know his men, and get the co-ordination of those three things in such a way that there is no opposition. He must be able to present the needs to a manufacturer and an employer so the methods, if they are dangerous, inopportune, or ineffective, can be in some way analyzed and be made better and the hazards reduced.

We have been told that this country has been wasting raw material in the last few years, enormously. We are faced with the same problem; European

problems are the same, that applies to our labor. We must make the conditions under which labor works comfortable, and safe, in order that there shall be less lost-time accidents, sickness and other preventable causes, and that men shall not be maimed and crippled. We must co-ordinate the human element and natural resources. And, just as he meets his problem in an open, fair-minded way, secures as much information as he can, and puts it in use, and if he seeks their confidences, their advice and co-ordinates all these efforts, his work will be successful.

I know of no position or work where a man needs more personality, general information, specific training, kindness, and general all round manhood than he does in the safety game. A man who knows that work and has the confidence of the employer and the men, has an opportunity second to none. A man who enters that field and endeavors to study and fit himself to secure the necessary information, can create of his position something more than that of a mere inspector's job in the factory. He can make himself a fundamental part of the organization and it is up to the man to build that sort of a thing in the organization. If he is able to do that and show decent and tangible results, he will not only have the co-operation and respect of the workman, but that of the employer also and he will be a fundamental, worth while, intelligent part of any business concern.

To attempt to define the work of these men with exactness in view of their very extended duties at present, would require the presupposition of such a variety of postulates as to almost preclude the creation of an exact definition or term. What I shall endeavor to do, therefore, is not to set down a limiting definition within the close confines of which such an engineer would be expected to operate but to indicate the logical development that has been made and the segregation of tasks that must be carried out in view of present conditions and what the past has revealed as the limitations of the reasonable scope of the activities of the safety engineer, and, in some measure, to show its relation to all of the fundamental fields of engineering.

The safety movement started without any background of experience whatever. It was virtually a new idea in our industrial life to relegate to one person the problem of protecting from harm and accident the persons of all the employees in a plant. In a few widely separated cases farseeing employers had unconsciously developed a safety sense in connection with much of their other work. They were those rare men of farseeing, deep thinking and analytical natures that had detected the weaknesses evidenced by unnecessary death and injury to their men. Their effort to protect their men was present as a controlling feature of their business plans, but its actual identity as a movement peculiarly directed towards safety was lost through its connection with the multiplicity of other departments and individuals. It was a scattered effort whose concrete results were lost through diffusion and through the many activities this effort touched. When attention was definitely focused upon the fact that lives were needlessly lost, living men obliged to carry dismemberments, functional impairments and disease through the remainder of their lives as a result of the failure of employers to provide safe and healthful working conditions the thought of careful men was fixed upon the need for providing against such loss.

The analysis of such accident records as were available at the time appalled them; the loss in money aroused them. Action was bound to, and

did, result from these analyses. It became evident in the industrial life of the country through the appointment of safety men, a safety movement in the governmental life of the nation through the creation of industrial commissions and boards and of laws compelling workmen's compensation to be carried by employers.

The first and most natural step was to guard machines and equipment that presented instances of exposed hazards so obvious as to cause the wonder, when attention was directed to them, that they had not previously been guarded. This development went on with some rapidity and little or no uniformity and with no previous guides that the men doing the work could follow. In view of the work accomplished to-day much of the earlier work was extremely crude. After a time, however, it was found that for some reason or other the accident frequency and severity rates remained practically constant, and, in some cases, began to increase. It was then discovered that education and instruction must be applied to those men not familiar with safe processes and methods as well as to inculcate in all persons a sense of a need to give more attention by themselves to their own safety. This was a candid recognition that guards as such could not entirely eliminate all accidents, but that a skill in safety must be developed to supplement the skill in the manipulation of material used in processes.

Following this educational effort a still further reduction in accident rates was observed and it continued for a time until a further standstill in the accident reduction rate became evident. Study revealed the fact that it was necessary to devote considerable attention to those conditions and circumstances that affected the health of employees. Suitable sanitary conveniences and bathing facilities were provided. Ventilation was so improved that dusts and fumes were taken away from work places and workmen were not exposed to them. Adequate light of a proper amount and intensity was provided so that it reached the work without flicker or glare. Rest periods, lunch rooms, recreation places and other things of this sort were developed to make the working period less severe and to provide that complete change and rest, even if for only short periods, that makes the human machine work more efficiently and with less harm to itself.

After this work had been in progress for a time there came another temporary halt in the frequency of accidents. Men then began to turn themselves more to a study of the fundamental conditions under which men work. The lay-out of plants, the design and equipment of structures, the handling of materials, and even the conduct of the manufacturing processes themselves—whether they involved materials that were generally harmless in themselves or presented specific hazards—began to receive their thought. Immediately a further reduction was observed.

The movement for safety in the larger plants has now reached a point, however, where there seems little left to do more than to apply some one of these four well-known methods of accident reduction to a particular situation in a given plant where statistics or conditions reveal such work to be necessary. There has been, and probably will be for some time, a difference of opinion as to which one of these four means of accident prevention and reduction should receive the most attention: Safeguarding machinery, educating workmen in safe practices, attention to the health and welfare of

employees or revision of the engineering practice and methods. Various companies have statistics available to prove their contentions in one way or another, although value cannot always be placed on them particularly because of the fact that only recently has the method of recording accidents given a reasonably accurate determination of the exact weight that must be placed upon the conditions they reveal and the point at which effort must be directed to bring about a further reduction.

It is not strange, when one has considered these facts, to realize that an employer is faced with the problem of deciding whether his safety man should be a skilful mechanic, a teacher, a physician or an engineer, or a combination of them all, nor is it unreasonable to think that his decision will be governed more or less by what the statistics he has available covering his plant may reveal or what his own personal prejudices and desires may cause him to believe necessary.

If, for example, a man is conducting a business in which a large number of heavy and complex machines are handling dangerous chemicals and materials creating much dust in a factory where the number of employees is relatively small, he would probably believe his work could be done best by a good mechanic who was familiar with the processes, and the employment of a physician. On the other hand, a man employing a large number of men and women at light work in a plant where food is prepared might feel that he would be served sufficiently by a man that was familiar with and enjoyed welfare work rather than by a man who was a good mechanic. A third man manufacturing automobiles and employing men operating machines in numbers and using material in great variety in a more or less complex plant supplied with power machines and distributing systems requiring expert supervision would feel that he needed a real engineer.

Considering, then, the wide variations of conditions in these three ordinary cases and recognizing them as only a few of the infinite variety in our complex industrial life, how is one to measure a man who must perform some one of these branches of safety work to a very considerable extent and the others to a lesser extent, to determine whether the services of a technically trained engineer or of a broadly trained man possessed of inherent managerial qualities can best do the work? To what extent, then, shall one consider the entire safety movement as coming under the broad head of engineering rather than under employment supervision or industrial service and relations? How can one definitely place safety work in the engineering groups and avoid a discussion of almost endless extent?

To do this it is necessary to consider the matter from a slightly different angle and I must be permitted a digression that may seem, at this point, quite irrelevant to the general subject but which has nevertheless a direct and very important bearing in determining the type of man that should be connected with safety work and particularly with its engineering problems.

One of the best definitions of "education" that has ever come to my notice is the one given by Mr. Whitney of the Workmen's Compensation Rating Bureau in a paper read before the American Teachers' Association at their annual meeting in Atlantic City on July 4, 1919. Mr. Whitney says that "an education is the building up in the individual of a means for comprehending the world." By the world he means that portion of the world's

activities in general that is bound to come within the scope and experience of the particular individual. With this simple and fundamental definition as a guide, is it not possible to attempt to define somewhat the scope of effort of an engineer, regardless of the particular branch with which he may be connected? Might not one paraphrase Mr. Whitney's definition of education to say that the education of an engineer is the building up within that individual of a means of comprehending nature's forces and the laws that govern them in order that he may devote this knowledge to a particular use in some field or branch that draws his interest. I would not for a moment convey the idea that an engineer's whole time is or should ever be devoted to the technical side of his training but that he, like all educated men, should be concerned with a full comprehension of the world in which he moves.

Knowledge is gained in two ways: By direct contact with the conditions under which we live—the method commonly known as experience—and by guided thought such as is to be secured in well regulated school curricula. The foundation of education, whether in engineering or in any other field that is to be gained by means of study in school, is usually governed by matters of economy. By means of study a man can obtain in a few years the fundamentals of his future work that might take him a lifetime to gather elsewhere and so enable him to start his active work in practical life—which is really the beginning—at a much earlier date than he otherwise could. Many of the foremost men in this country have never been within the walls of an institution of learning, yet, on the other hand, some of the foremost men have spent many years within such an institution. Careful analysis, however, shows that the larger number of well-known and truly successful individuals are men who have developed broad-minded and rich characters as a result of the years of study and effort they gave to guided thought in schools and universities. Such men are found in every walk of life—in engineering work as well as in other.

Engineering as a profession has recently begun to be measured in its true importance. The first men to whom the government turned when our entry into the World War forced problems of production upon it, as well as the men who were first in the fighting area and who brought the first tangible results both here and abroad, were men who were trained primarily as engineers. They were able to comprehend the situation and to do their work quickly and well because of their familiarity with the laws which governed the conditions with which they were presented and because of their inherent ability to think, plan and execute in an orderly and logical fashion. It is interesting to note also that many men in other than strictly engineering lines performed remarkable feats in this essentially technical field, not because of their technical training, but because they were fundamentally engineers at heart and possessed of that natural sense and ingenuity in engineering matters that is born in some men, and which, even though it may be diverted by totally different interests cannot be gainsaid in its ultimate appearance when stirred to action. It was the men not technically trained who did the "fuddling" in the war work.

While the results of engineering knowledge are made evident in concrete form by the work of men who are trained as engineers, the tools with which they work and the laws of nature that they follow have been studied and

their possibilities have been revealed through the work of students and professors within the walls of schools, laboratories, and research departments. The development of the welfare of this country, or of any other, as a result of engineering and scientific work is dependent upon the researches of these investigators and explorers into the secrets of nature. As early as the nineteenth century, Tregold, who was one of the first civil engineers and built many of the canals in this country and England, made this significant statement: "The real extent to which it (engineering) may be applied is limited only by the progress of science. Its scope will be increased by every discovery in philosophy and with every invention in the chemical and mechanical arts."

Engineering is both theoretical and practical. One group is concerned with a study of real problems still unsolved and the other with the application of the facts that have been revealed by such study to the conditions they can correct. Frequently in such men as Thomas A. Edison or George Westinghouse, both the theoretical and the practical man, are combined in one individual. Modern life has grown to be very complex and when one considers the multiplicity of things that now minister to our daily comfort, and that are even considered as absolute necessities to our existence in the larger centers of population, one is appalled at the amount of work that is performed under the guidance of technically trained people.

The average person usually associates with the term "engineer" a man of rather limited experience in the general humanities of life but filled brimming full of knowledge concerning his particular line of work. Some technical specialists, unfortunately, are such men, but the larger, broader-gauged engineering men are not of this sort, nor do they believe in such restricted mental development.

The Carnegie Institution recently made an investigation of methods of engineering education followed in various schools in this country and in the practicing profession to determine something of their scope and value as a vital part of our national life. One of their questionnaires sought to find out the six principal qualifications that were considered essential in a well-equipped engineer regardless of the particular branch in which he was interested. As a result of this investigation the almost universal opinion regarding the qualities of such a man and their relative importance were as follows: Character, judgment, efficiency, understanding, knowledge and technique. I might say that this was the expression, not of professors who had never been in business nor of the untrained minds of young students, but was the mature, careful thought of business and professional men who had been a lifetime in the work.

If, then, engineering work in general requires such broad, fundamental training, how much more then should a man who deals, not only with concrete, lifeless materials that can be made to follow natural laws, but with human beings subject to such divergent impulses and instincts, be equipped with the greatest amount of information and experience in order that he shall be enabled to appreciate the mental attitudes and peculiarities, not of one or a group, but of many people. How important this attitude and training is may best be illustrated by a consideration of China, a country whose history antedates the Christian era and which possesses some of the oldest engi-

neering works of which we know. China lacks a conception of her possibilities capable of development. She has been founded and has grown upon experience only. The imagination that is broadened and trained by a conception, not of immediate problems but of others apparently unrelated and immaterial has resulted in our country developing a transportation system and means of communication that have made available raw materials that at times seemed inaccessible, and has directed its use in such a manner that our growth in less than four hundred years has been infinitely superior to that of China in a period of four thousand years.

And where, at last, I hear you ask, do these various conceptions lead? May I venture the thought that engineering is not necessarily a matter of using theory alone to a solution of problems that arise but is the use of *all* information and theory in our ventures and that it is controlled by imagination and furnishes a means to sift and analyze new conditions and to select and apply known facts to their solution. To study to do such work, not only with the idea of immediate gain for himself but with the thought that as a result of his effort the lives of many men shall be made better, is the broader conception of the true engineer.

One other consideration I must bring to your attention at this time, because it may have escaped your notice, and that is the fact that the pouring out of apparently almost unlimited natural resources during the last few years has indicated in a practical way the safe high-water mark for such procedure in this country. It is no longer possible to waste raw materials through improper methods, or to waste labor through the same reckless disregard of fundamental hygienic laws that has been going on during the last three centuries of our formative growth. It has become evident to thoughtful persons that we must now begin to do what European countries have been forced to do for several generations—secure from every bit of raw material the last ounce of useful production and from labor only real results from actual effort put forth.

Those concerns, therefore, which have recognized these fundamental truths and necessities and have set out to secure men capable of working on such principles, are the ones which will outstrip their competitors and be successful. Such efforts apply not only to the use of raw material but also to the wise application of human labor to work. The destruction that raged during the great war destroyed a large proportion of the productive manhood of Europe, and, though our direct loss in this respect has been small, yet we of necessity must feel the effects of these losses in other countries. The effects will appear first in the reduction of the amount of common labor available for work here. To make good this loss the men of higher efficiency employed in this country must be provided with a means so that they may work more and more with machinery and so obviate the unnecessary toil that can be thus eliminated. Directly, and in proportion as this is done there will be a variation in exposure to machinery hazards and occupational diseases.

In this general reco-ordination movement that trends so largely into the realm of engineering, the men who are concerned with making safe and healthy the conditions under which men toil or under which they live and have their being, must be primarily trained as engineers. Into his hands more

and more will be placed problems that require experience, far-sighted judgment and balanced sympathies. He will be enabled to bring to bear upon their solution many ideas and thoughts that he has gathered in other fields and to use a broad sympathy and understanding of the laws of nature that should function in his mind almost as unconsciously as his breathing does in his natural existence. He will lose no opportunity that will fit him in these directions. It is men who work with this larger understanding in mind and who have studied for, or acquired through experience, the necessary training and personal background who are really engineers. If that work is directed toward the preservation of human life they may be correctly, even though broadly, termed safety engineers.

Perhaps I may have unconsciously arrived, through several steps, at the summation of the qualities of a safety engineer and have given, loosely perhaps, a definition of such a person. If I were to put a definition of a safety engineer into a few words that would enable an employer, or any other intelligent person, to appreciate the qualifications of such a man from the standpoint of actual technical training, and, at the same time enable him to appreciate the scope of vision and the experience and ideals that ought to supplement his technical training it might be perhaps in this wise: Any person who, through adequate training and appropriate experience, understands and can interpret and use the laws that control the materials and forces of nature as they affect the human body and is capable of controlling or using these forces in a manner that prevents their harmful effect upon human life, may be said to be a safety engineer. This definition covers that man who specializes more particularly in the engineering side of safety.

Only as far as a consideration of these facts is forced upon employers, brought to the attention of the public and followed consistently in their work by capable safety engineers themselves, can their work ever come to be considered as true engineering effort and their accomplishments rated on a basis equivalent to other engineering efforts.

To attempt to limit the activities of an engineer so that he must deal wholly with concrete laws, materials and conditions as separate and apart from the emotions, the psychology, the desires and habits of human beings, is to force the present conceptions of the safety engineer's work now generally prevalent against their natural impulses and into channels to which they are not yet accustomed. The proportion of actual engineering, of education, of welfare and service work, and of medical and surgical work with which any single safety man must be concerned is dependent upon the particular conditions which he faces in his particular job. In any plant of consequence circumstances are bound to be presented where the protection of human life from injury and disease is involved to a degree sufficient to require the most thorough engineering experience more frequently than will be the broad sympathy, the kindly attitude, the effort to impart knowledge and the appreciation of the workings of the human mind and body. In view of what has been definitely revealed by statistics, by the trend of our national development and by the circumstances with which we are faced in the increasing substitution of mechanical operations for those of manual labor, the safety man must more and more devote his time to the study of conditions from a purely engineering basis lending his experience and sympathy to those other

men who devote their time to the welfare, to the physical condition and repair of the body and to the enlargement of the mind which is their particular concern. Only in so far as he does this is he free to develop unhampered the broad constructive policies concerning the safety field that affect health, efficiency, turnover and morale in his plant and return to his employer that measure of devotion and service which meets with substantial reward.

DISCUSSION

MR. LITTLE: Discussion of this paper will be opened by another safety man, a graduate of Cornell, Mr. A. S. Regula of the Liberty Mutual Insurance Company.

MR. A. S. REGULA: Mr. Chairman, Ladies and Gentlemen: Mr. Rausch has not left very much for me in the way of discussion. He has covered the discussion so admirably that I really wonder just where I am to head off. I find the time is getting short anyway.

There is one point, however, that I wish to bring out and emphasize particularly. Mr. Rausch has well indicated the scope of engineering that is involved in this problem of accident prevention purely from the engineer's side. The scope is about as diversified as the engineering problems that we meet in our every-day industrial expansion and it concerns itself with design and construction and operation and production. A safety engineer must be given the consideration in all of those matters if we expect to get at the root of the unnecessary accident evil.

In any problem of accident prevention, safety must be given the first consideration. I think I might be safe in saying that there is not a single one of you present that has not been in plants with insufficient crane clearances; plants with insufficient railroad clearance at the entrance to the building, or to the plant itself; plants in which offices, tool rooms, wash rooms, locker rooms, or other places requiring frequent visits by the employee, are so located as to make it necessary for that employee to walk through particularly dangerous and hazardous places in order to reach them, and a thousand and one other conditions that, because of faulty engineering, have brought about or have introduced particularly hazardous conditions.

It must be apparent to you, therefore, that there is need for an awakening on the part of our engineers, our mechanical, electrical, and civil engineers — an awakening to this problem of accident prevention from an engineering side. That can perhaps be best brought about by an awakening on the part of our engineering schools to the need for proper consideration, and the incorporation in their engineering curriculum of a course in safety so that the graduate engineer, as he is turned out by that institution, will have as part and parcel of his engineering knowledge before him at all times this matter of safety.

Now, any engineer in design or construction knows fully the quality of the material that goes into that structure. From an engineering standpoint, he knows that that structure or the machine is safe, but in designing that structure safely he oftentimes disregards entirely the safety of the person or persons that will be called upon to use that structure. There is the high spot of our accident prevention problem from the engineer's standpoint.

Now, this subject isn't a new one, the National Safety Council and the Safety Institute of America have, for perhaps two years back, been endeavoring to secure on the part of the engineering schools the incorporation of some such course in safety, and they have appointed a joint committee on promotion of safety education in the colleges and universities.

Now, I am bringing the point up this morning in the hope that there is some one among you who as an alumnus will be able to bring some pressure, some influence to bear upon the engineering schools in which you received your early education, in an effort to have due consideration given to this matter of the safety education of all of our engineers regardless of whether they take up safety, civil, mechanical, electrical, or any of the other highly specialized branches of engineering.

You will perhaps be met with the argument that the courses in engineering at the present time are so overcrowded as to perhaps make it necessary to add one or two years to the engineering curriculum, and that it is not necessary to incorporate a special course in safety in those schools. But it is possible and perhaps most desirable to make safety part of the every-day instruction of that young engineer.

To illustrate: Take your course in machine design. You can, in the course of that instruction, perhaps bring to the attention of that new designing engineer the matter of incorporating in original design the matter of guards for gears and other dangerous revolving parts.

And the course in building instruction. You can point out to the engineering student the need for considering crane clearances, train clearances, proper stair construction, balcony construction, and items of that nature. You then make safety part and parcel of the engineering knowledge of that young engineer or the student. You place it before him in such a way that in his future work in the field any engineering problem that he may have before him will be given consideration from the viewpoint of safety. The result will be that all of our engineers in their design in the future of structures, mechanical equipment, or what not, will give consideration to the matter of safety for the persons employed in the building.

In addition to proper safety education of all of our engineers, we must recognize the fact that industry is demanding a highly specialized engineer, as Mr. Rausch has indicated, the engineer in safety. I see there a wonderful opportunity for the Safety Institute in acting as a sort of finishing school for the young graduate engineer; taking him into the institute and in an intensive course of training of a few months' duration, bring to his attention these vital matters of safety as they apply in all fields of endeavor. Accompany that perhaps with inspection visits in the larger industries where consideration has already been given to these matters and turn out that highly specialized human engineer, the engineer in safety.

GENERAL DISCUSSION

MR. LITTLE: We were not able to start quite on time and I understand the Chicago train, upon which Mr. Price and Mr. Young are traveling, is an hour late and they will not be here at half past eleven when they were to speak. We will now have a few moments for discussion.

MR. S. J. SMITH, Factory Inspector, State Industrial Commission: While I fully appreciate all the characteristics of a highly trained engineer such as has been described by Mr. Rausch, I take it, though, that all the safety engineers with college education are those who might go to the larger industrial establishments. We are forgetting that all the establishments in which hazards appear are not the large industrial plants. We have many small plants, machine shops, and many others too numerous to mention, where it would be impossible to have a safety engineer with a college education, or a post graduate course in a finishing school. Where are we going to fill the void to minimize the hazards in these plants where they can't afford to have such a safety engineer?

MR. LITTLE: Quite a natural question, but, of course, I think you will all realize that the problems of construction and equipment and the dealing with natural forces, are first of all, things that involve a high education. And, while there may be various branches of safety work and safety inspection, in this program we want to place before you the fact that the real engineer, the well trained man, should be always led into the safety field. As the last speaker presented it, that the efforts should be carried to the technical engineering schools in order that the curricula of the engineering colleges and universities shall contain within their regular courses, the safety conception for operation as well as the safety conception for construction.

I think it would be perhaps agreed upon by engineers themselves that our schools and our practice of engineering — I mean technical engineering — have stopped far short at times of safety in operation. It is splendid so far as safety in construction, strength, durability, all those are provided for by the engineering profession, but safety in operation has not been provided for. Why is it that we have to add so many safeguards to machines, when many of them I would suppose, might have been originally constructed safer? A lot of money is being spent in originally constructing safe machines for operation, so this is the point we are aiming at in the program. It isn't that nobody else should be in the game, or be called safety engineer except the highly trained man, but we are not going to make very much progress in some of our better industries in the accident prevention and saving of life and limb until we go down to the depths of the job.

MR. KAUFMANN: Mr. Rausch has pointed out the kind of a man for safety engineers, and it seems to me that this State, and other States and insurance carriers, have been lacking in attempting to make the job attractive for the kind of man Mr. Rausch pictures as a safety engineer.

My mind goes back to 1913, after the investigation of the Factory Commission in this State, the splendid laws that were constructed for the carrying out of the safety work and the protection of life in this State; the making up of the code by eminent engineers. You provided a code that required a mechanical engineer, a man of practical experience and a man of broad sympathy, yet you then offer him \$1,200 a year to get into the service.

MR. LITTLE: I don't think that applause approved of the \$1,200 salary.

MR. KAUFMANN: That not only goes for the State, but it goes for every insurance carrier. I have been a chief inspector in this State for various

companies and when they send you into the industries of the State they expect you to know everything from mining engineering to the rolling mill end of it, and everything from the metal manufacturing to the textile manufacturing, for \$2,000 a year. Where is a man going to have any ambition for any kind of a job like that when he can be a longshoreman for \$48 a week?

These are the things that the manufacturer, the chief engineer of the insurance companies, and the Industrial Commission want to give consideration to, because if Americanism means anything, it means in the future the protection of your family. Any man who has the brains, who has the ability to carry out the things that Mr. Rausch has outlined, certainly has the integrity to provide for his family that he is responsible for, for the development of the future of this country.

These are the things we must think about, and unless we think about them we are not going to make that job attractive, and we are going to get an inferior class of men.

MR. LITTLE: If we had the power we would increase the salaries of all the safety men right now.

MR. ROY S. BONSB, Tanners' Council, N. Y. City: It is so easy for an engineer, a safety man, to get a little technical training through very excellent courses in engineering. I am a graduate engineer myself, but it is easy to get that education without going to college and it would be very much help to the average safety man in going about his work. I meet some safety men whose lack of knowledge of technical matters is simply appalling and they would make their work so much more effective if they would take the time to read up on technical matters. In that way they could carry the work on in the way Mr. Rausch has outlined, without being college men.

Being a college man doesn't mean that you have a knowledge of technical matters at all, but the point is this, if our safety men would spend a little time in trying to acquire some of the fundamental mechanical principles, they would be much more effective without much expense and little effort. It would increase efficiency one hundred per cent.

MR. LITTLE: My observation is that the safety men want to improve. In one company in Pittsburgh they had 400 men with sixteen lecturers, a less number in Chicago, and last year 383 women enrolled in the lecture course. Mr. Bonsib's point is well taken. The possibilities of improvement in these courses, books, lectures, are being multiplied.

MR. J. E. CORNELL, Safety Inspector, Franklin Manufacturing Company, Syracuse: I want to indorse the sentiment of the last speaker. The question of safety engineering and of safety inspection is to keep it so high and so broad that it requires much education. If it has not been the privilege of some of our engineers to have secured a college education, the facilities are before them to-day. For instance, they can take the laws of the State and the discussions of the safety congresses of this State. Now one of the things, one of the reasons why I rise to my feet, before I get through I want to ask a question for my own information, from Mr. Rausch.

I believe that one of the greatest safety devices is a careful man. I have been a safety engineer for a number of years. Previous to that time I was a

foreman for eighteen years, and I know what some of the troubles are that the foreman is up against. In recent years I know what the troubles are that the safety engineer meets. There are a thousand and one things that he is approached upon. He can't walk through a factory where four or five thousand men are employed, but that George or Bill, or John, will approach him every few feet to ask about some part of the machinery.

I have been very fortunate in that respect, as the foreman in the plant which I represent has the spirit of co-operation. There are many things that one engineer can not possibly see in his daily traveling through the factory; the gears, the belts, the exposed shaft ends, and innumerable things which he must keep his eye peeled for in order to see them all.

I want to ask Mr. Rausch a question in regard to how, or what method he would employ to have the men protected thoroughly from the emery wheels, from the sparks from emery wheels? That has been one of the greatest things which I have had to meet, to overcome.

MR. LITTLE: You want the emery wheel question discussed briefly? Mr. Rausch will do that and it will close our discussion.

MR. RAUSCH: I couldn't attempt to go into the problem of the emery wheel because it is one that is considered an individual thing. You can't set down any definite rules, you must consider the problem as a unit.

There is one thing I will say, workmen have been preached to and preached at, and talked about, as ignorant and unwilling to follow advice, but I have yet to find a workman who, when you approach him candidly and kindly and explain the why and result of that hazard, will not use and provide the necessary guards and protection for himself. You can't hammer a child and call him an ignorant, willful child and get results; and a man is a child grown up, in that respect.

If you go through your shop, whatever device or operation, or conditions are there, and have in mind your definite specific hazard you want to overcome, and have a definite way to overcome it honestly and fairly, you will get the exact results you want. That applies to any condition whatever. I have no patience with the men who preach to the men that they are careless. Around the men you will find a group that know the hazards and know that safety is a personal job.

I am merely stating that the engineering side of it is to get that information down in the simplest terms to the man that must use it, no matter if he is the man who handles a pick and shovel, or the president who sits behind a mahogany desk — because he is just as ignorant as the man with the pick and shovel. For instance, there was a plant that had thousands of gallons of sulphuric acid elevated at fifteen feet. The tank above, according to the manager's knowledge, had not been inspected for ten years. That was a hazard he knew about and he said he would do it the first chance he got, he didn't think it necessary then. Now the man behind the mahogany desk was just as ignorant as the man who put the acid in the tank. The safety man gets the information in to the president — I don't care what your problem is, your men will know the hazards, and knowing them will use that knowledge to protect themselves. That is the first instinct of a human being.

MR. LITTLE: We will now turn to the subject of "What Constitutes Good Inspection." Of course, when any subject is presented and it is discussed,

there are a good many other things that enter our mind, but I think if you will glance over the program to-day, that most of your questions will have an appropriate place sometime during the day. Of course, as each subject is discussed we will take all the time for floor questions and discussion that the hour will permit.

Mr. Lew Palmer, Director, Safety and Personnel, Equitable Life Assurance Society, will speak on the subject of "What Constitutes Good Inspection." Mr. Palmer was one of the organizers of the National Safety Council, past president of it, and we are delighted indeed to welcome him to the platform.

WHAT CONSTITUTES GOOD INSPECTION

BY LEW R. PALMER, DIRECTOR, SAFETY AND PERSONNEL, EQUITABLE LIFE ASSURANCE SOCIETY, NEW YORK CITY

MR. PALMER: Mr. Chairman, Ladies and Gentlemen. Some years ago, about a year or so before the development of the National Safety Council, as Chairman of the Safety Committee of the Association of Iron and Steel Electrical Engineers, I was to give a talk at the banquet of that association and I have never forgotten the introduction that was given to me by Mr. John Reed, the then president of the association. He said, "This is Lew Palmer, hell for safety."

I, therefore, have safeguarded straining your patience beyond the elastic limit by outlining my remarks, in a limited way, on paper.

"ETERNAL VIGILANCE IS THE PRICE OF SAFETY"

Inspection is the backbone of prevention and no speaker can treat the subject lightly. I regret that it has not been possible for me to devote the time to the preparation of this paper that the importance of the subject warrants. There are many classes of inspection; government inspection, insurance inspection, and plant safety organization inspection. As this is Safety Man's Day, I assume it was the desire of the program committee that the speakers direct their ammunition against a sector limited to plant safety, and I have accordingly confined this paper to that class of inspection.

TACT

Quite properly tact has been given first place in consideration of the subject of good inspection. An inspector may have education, practical experience and ability, but unless he has tact he lacks the main essential of a good inspector.

Those of us who have done pioneer safety work learned at the outset that promoting safety was largely a matter of salesmanship, and a good salesman cannot be successful unless he is tactful. Safety must be sold from the top to the bottom — to the management and to the workmen.

I recall a discussion between a Pennsylvania factory inspector and a steel mill safety inspector, where the factory inspector could not understand how a certain division of a large steel plant had made such improvement in safeguarding and in accident prevention. According to the state inspector he had never ordered a single safeguard installed but that, according to the man in

charge of the division in question, it would "surely shut down the mill if installed." The plant safety inspector claimed that it was very simple. He knew his man. He knew that he was an enthusiastic baseball fan, and in most cases the interview started with a discussion of the latest achievements of the local prospective pennant winner. Eventually, some of the accidents occurring in other departments would be discussed. The good records that had been made through team work in some rival mill or department would be commented upon, and the sporting blood of the superintendent in question would soon begin to circulate. Before the safety inspector had left the mill one or more of the safeguards he had gone down to the mill to have installed had been recommended by the superintendent himself. In most instances it is far easier to get people to do things because they want to than because they have to. In this case the safeguard was installed in a remarkably short time, and woe be unto the foreman or workman responsible should the guard not be maintained in place.

It is stated that this superintendent of millwrights, responsible for the safety of several hundred men, working in extra-hazardous places, eventually carried away the all-year prize for the lowest department accident record of the entire plant covering about seven thousand employees. Knowing all three men in question and the conditions involved, I do not hesitate to say that this is one of the best examples of the importance of tact, and what tact can accomplish, that has come to my knowledge, and it can be truthfully said of faith, hope and tact that the greatest of these is tact.

APT OBSERVATION

Another element that should determine the proper selection of a safety inspector is the quality of apt observation. We have seen men who, on entering a factory or mill, could almost immediately perceive the good or bad conditions that existed. To be sure this presupposes a knowledge of what good and bad conditions really are; but there is an element other than simply knowledge. It is the quality of quick apprehension that goes with a mind trained to concentrate.

Many of the real hazards in industry come from unsafe practices, and it requires a wide-awake inspector to detect careless methods that in most cases are considered by the rank and file as merely a part of the day's work, and perhaps for a considerable time do not result in the serious or fatal accident that eventually is sure to follow.

A real inspector must be able to detect the weak link in the chain of operating methods, even though the foreman maintains that an accident has not occurred in the twenty-five years that he has run the machine.

COMPREHENSIVE AND PRACTICAL RECOMMENDATIONS

We cannot expect to have comprehensive and practical recommendations from a safety inspector without sane judgment, and we could scarcely trust the important work of a safety inspector to a man who is not endowed with this prerequisite.

To be convincing, recommendations must be comprehensive, and, to the plant manager from Missouri, must be absolutely practical. This requires that our safety inspector shall not only be tactful and apt, but must have such training and practical experience as will enable him to justify his recommen-

dations. He must be conversant with the standards of safeguarding and safe methods of operation in other plants and industries similar to those he is called upon to inspect, for it is much easier to convince the operating department that a safeguard is practical if you can give them first-hand knowledge of what has been done in a neighboring plant or one whose successful operation is admitted. If the recommendation involves a considerable expenditure of money, alteration of equipment, or substitution of new for old, blueprints and photographs, if obtainable, showing the device in actual operation, usually has the desired effect, and most assuredly will if the safety department is supported by a progressive management and an actual hazard exists. The determination of such fact is a test of sane judgment.

In many instances the correction of unsafe and unhealthy conditions can be combined with improved operating methods which result in increased production. These factors, however, are not elements of inspection alone, but can also be charged as the engineer's duty in accident prevention. The inspector and the engineer must play the game together. There must be team work, for a careful study of the broad subject of inspection will soon prove to us that the work of the inspector out on the firing line—where equipment must not only be so designed as to protect the workmen, but also be practical of operation—and the experience gained by the inspector in studying such problems, should not be lost sight of by the engineer.

The relative importance of different standards varies in every plant in accordance with the local risk factor, having in mind, also, the number of workers exposed.

In one plant, such as a furniture factory, the woodworking hazard may predominate.

In the rubber industry the calendar rolls demand first consideration.

In the steel industry, hot metal cranes, blast furnaces and skull crackers are nightmares to the steel mill safety inspectors and engineers.

In the mining industry safe practices are recognized as of vital importance, and inspection, therefore, is of pre-eminent value.

In like manner, in the explosives industry good inspection, in order to insure safe practice, has reduced the accident frequency in this industry to a relatively low degree—a most commendable achievement when the character of the work is taken into consideration.

A textile plant may not be classed as extra-hazardous, but without good inspection of housekeeping methods, health conditions, safety conditions, including elevators and fire escapes, it cannot be classed as a good risk from any standpoint.

Although many of the industries carry peculiar hazards that require special standards, there are many hazards common to several separate industries or occupations.

It would be impracticable to enumerate all of the standards that are required in order to insure good inspection throughout the industries as a whole.

For the new inspector just assuming his duties it might be well to suggest that he give attention to the following standards, which may prove of assistance to him in his important work.

First, he should know the safety standards required by law. The best way to keep out from under the law is to keep ahead of it.

Where the State Industrial Board has not provided adequate standards, the "Industrial Safety Standards" developed by the various compensation insurance companies in co-operation with the leading industrial States — which standards represent the nearest national standard existing to-day — are recommended as a guide to the safety inspector. The items covered in these standards are listed herewith:

- Standard railing.
- Standard toe boards.
- Fire hazards.
- Floors.
- Floor openings.
- Wall openings.
- Stairs:
 - Stair lighting.
 - Stair treads.
 - Stair hand rails.
- Elevated runways and platforms:
 - Platform railings.
 - Platform toe boards.
- Traveling cranes:
 - Crane bridge foot walks.
 - Access to foot walk.
 - Access to crane cab.
 - Crane warning signals.
 - Crane cabs.
 - Crane bumpers.
 - Crane trolley pans.
 - Crane fenders.
 - Crane safety switches.
- Elevators:
 - Elevator shear.
 - Elevator safety catches.
 - Elevator shaftway entrances.
 - Elevator shaftway protection.
 - Elevator car limit stops.
 - Elevator machine limit stops.
 - Sides of elevator car.
 - Elevator car lighting.
 - Elevator landing illumination.
 - Elevator signal systems.
 - Elevator locking device.
 - Elevator car top.
 - Protection under elevator sheaves.
 - Elevator operators.
- Boilers:
 - Boiler safety valves.
 - Boiler blow-offs.
 - Boiler room exits.
 - Boiler valve locks.
- Boilers — Continued
 - Boiler non-return valves.
 - Boiler inspections.
- Electrical equipment.
- Explosive liquids.
- Explosive vapors.
- Acids and caustics.
- Engines:
 - Engine fly-wheels.
 - Engine governor.
 - Engine parts.
- Transmission of power:
 - Gears, friction drives, sprockets.
 - Friction clutches.
 - Vertical and inclined belts.
 - Horizontal belts.
 - Shafting.
 - Shaft ends.
 - Shaft protections.
 - Belt shifters.
- Control of power:
 - Individual drives.
 - Group drives.
 - Power control systems.
- Machines:
 - Machine stopping devices.
 - Moving parts of machines.
- Points of operation.
- Welfare and health:
 - Ventilation.
 - Rubbish and material.
 - Light.
 - Eye protectors.
 - Respirators.
 - Foot and leg protectors.
- Safety organization:
 - Class A — 1 to 150 employees.
 - Class B — 151 to 500 employees.
 - Class C — 501 employees and over.
- First aid and hospital:
 - First aid kit.
 - Dispensary with nurse.
 - Emergency hospital.

The Safe Practices pamphlets published by the National Safety Council have been developed by a corps of engineers who are familiar with the outstanding hazards of industry, and no safety inspector can afford to be without this valuable information. The subjects covered include:

<i>Subject</i>	<i>Pamphlet Number</i>
Ladders	1
Stairs and stairways.....	2
Boiler rooms	3
Cranes	4
Belt shifters and belt shippers.....	5
Knots, bends, hitches, and slings.....	6
Belts and belt guards.....	7
Shafting, couplings, pulleys, gearing.....	8
Engine guarding and engine stops.....	9
Oiling devices and oilers.....	10
Floors and flooring	11
Scaffolds (for industrial plant use).....	12
Grinding wheels	13
Goggles	14
Freight elevators	15
Clothing	16
Yards	17
Power presses	18
Exits, fire alarms, and fire drills.....	19
Woodworking machinery and equipment.....	20
Accident records	21
Shop lighting	22
Gas and electric welding.....	23
Fire extinguishment	24
Acids and caustics	25
Manila and wire rope.....	26

The American Society of Mechanical Engineers has developed a boiler code that has been adopted by a number of states, and this same society has in preparation a code of safety standards for the construction, operation and maintenance of elevators, dumbwaiters and escalators, which is being prepared in co-operation with the United States Bureau of Standards.

The United States Shipping Board Emergency Fleet Corporation has prepared a very complete set of safety specifications for plant construction and equipment, covering the following subjects:

- Construction features
- Workmanship, material and inspection
- Compensation insurance
- Legal requirements
- Safety specifications for
 - Building construction
 - Cranes
 - Elevators

Safety specifications for — Continued

- Electrical apparatus
- Floors and floor openings
- Illumination
- Ladders (permanent)
- Platforms and runways
- Power plants, including
 - Boilers
 - Boiler plant design
 - Engines, turbines and accessories
 - Motors and generators
- Railings and toe-boards
- Railroad tracks and clearances
- Safeguarding
 - Machinery
 - Power transmission apparatus
 - Remote control apparatus
- Stairways

The United States Bureau of Standards has developed a National Electrical Safety Code, which has been published as Circular No. 54.

These are a few of an almost endless number of publications, all of which could properly be included in the plant safety library, but this limited number is offered as furnishing the foundation from which can be developed comprehensive and practical safety recommendations.

FREQUENCY AND SYSTEM

Inspection that is not followed up until recommendations are completed surely cannot be classed as good inspection. Quite naturally, the most important things should receive first attention, and as the fixed hazards of the individual plant are determined a follow-up system suitable to local conditions should be developed.

While we place emphasis on prevention, and inspection to prevent, accidents will occur, and every accident within a plant—in fact every near-accident—should be investigated; a thorough inspection made, and preventive recommendations submitted.

Safety and operation go hand in hand, and where the operating department is held equally responsible for accident prevention as for production, the lowest accident frequency is found. Each department head is held responsible for the accidents occurring within his department, and all foremen are trained to act, in a measure, as safety inspectors.

When equipment is inspected to ascertain whether or not it is in operating condition and necessary repairs made, safety inspections properly become a part of these maintenance inspections. For example, in a steel mill the electrical department is held responsible for the mechanical and electrical maintenance of a hot metal crane. When the daily or weekly inspections are made of cables, gears, electrical and mechanical brakes, etc., these inspections become as much a matter of safety inspections as of operating or maintenance inspections.

I am wondering if the State should not, at these annual Congresses, submit a report—perhaps it will be done at a later meeting of this Congress—

submit a report and classification of the causes of accidents. I think that might throw some light on the subject and enable the safety engineer to direct his attention to the more important matters.

In speaking from my past experience in the State of Pennsylvania, where for some time I was connected with the Department of Labor and Industry, the records show that we compiled there particularly the fatal accidents. The information that we developed through our inspection was of great assistance to the safety engineer in the plants of that industrial state. We had there, I believe, last year 3,400 fatal accidents in that state. Each one of them had a special investigation, and that investigation was not filed or closed until some evidence had been given that preventive measures had been taken.

I think that in a state as well as in an industrial plant, records of accidents should be kept in order to assist the safety men in the individual plants to meet their problem in the best way possible.

Department safety committees, made up of foremen who are held responsible for local conditions are, from a practical standpoint, unquestionably best qualified to make recommendations for the protection of themselves and their fellow-workmen. Here we have a special class of inspection, not necessarily by a safety inspector, but as we promote safety throughout the entire plant our foremen and the workmen on these committees become our best inspectors.

The safety inspector or safety engineer in such plant acts in a supervising capacity; makes recommendations as to forms of safety inspection, follow-up systems, etc. As to frequency of inspection, this is a matter to be adjusted in accordance with local requirements. Some equipment must necessarily be constantly under inspection, whereas, other equipment requires only periodical inspection. I think those of us who have had experience with saw guards agree that they need almost continuous inspections in order to keep them where they belong. It is a well-known saying that "What is worth doing, is worth doing well," and I know of nothing to which this applies more particularly than to inspection, for what warrants inspection, warrants good inspection.

DISCUSSION

MR. LITTLE: The discussion will be opened by Mr. J. C. Heckman, Superintendent, Larkin Company, Buffalo.

MR. HECKMAN: I feel that it would be rather presumptuous for me to attempt to add anything to the very comprehensive paper which Mr. Palmer has presented. The best that I can hope to do is to summarize the points which he has made as they have impressed me as a much inspected manufacturer.

I don't suppose it is necessary before a body of this sort, to sell the idea that one man in the plant to whom all safety matters comes up, is not only desirable but necessary. In a small plant which may not feel that it can afford the whole time of one man, he may have other duties, but there should be one man who, everybody knows, is responsible for safety matters, and to whom they can present any point that comes up.

We have heard a great deal about the wide ramifications of safety engineering this morning, and, of course, it is impossible that any one man can be expert on all of the branches of the subject, but this one man should have available the best brains that the establishment possesses on any particular

problem that may come before him. It seems to me that the most important qualification that a plant inspector should have is conscientiousness. It is extremely difficult for a man to be just as keen on his one hundredth inspection of his department as he is on the first time he went through it, and yet we all know that is necessary. We must have a man who will conscientiously go through his inspections each time as though they were the first. The best way to stimulate this, I think, is for the man to have a regular schedule of inspections laid out and live up to them and then present a written report of every inspection.

The next thing I think an inspector should have is a sense of proportion. He must classify the hazards as he finds them between the little hazards and the great ones. If he wolfs a great deal about the little things, when he really comes across a big hazard he is very apt to discount it.

I was very much pleased with Mr. Palmer's emphasis of the qualification of tact. We manufacturers have met the small inspector with a large idea of his authority and responsibility, who makes our hair rise up on our back as soon as he enters our office. Such a man can issue orders and arbitrarily get them grudgingly complied with, but he doesn't do for safety what a more tactful man can do. He doesn't get the manager to appreciate the importance of the principle involved, to agree with him that the safeguard is necessary, and to be so sold on the proposition that in a similar condition which the inspector may not see, he may be glad to carry out the same recommendation.

An inspector, whether a plant inspector, or a government inspector, or an insurance inspector, should, of course, have ample authority to enforce his requirements. But, he should be very, very careful in exercising that authority. If he has the proper tact, the proper approach, he will very rarely find it necessary to enforce his requirements. He should get his result by persuasion, by education, rather than by compulsion.

I think that a private inspector should, of course, have before him the records of all the accidents of the plant, and study them carefully. That is what will enable him to develop his sense of proportion and of the hazards which very seldom produce trouble. He should concentrate on the hazards which the records show are the most hazardous. He should, therefore, keep very systematic notes on all of these experiences and particularly make notes of suggestions for improvements in the factory which might not be economically or commercially possible to make at the moment. Plants are continually changing, new machinery installed, and if the inspector has before him these notes he can easily work in these ideas without any great deal of expense. For the same reason, therefore, all plans for new plant layout should pass before this inspector in order that he may make such recommendations as may occur to him before the actual work is done.

It is so much easier to take care of these matters on paper than to correct the difficulties after the equipment has been installed. In order to cultivate that conscientiousness that I speak of on the part of the inspector, it seems desirable that he should have every opportunity to visit other plants, to attend meetings of this sort, to exchange views of other inspectors, all of which tend to keep him alive and keen on the job. We have found it particularly stimulating to have our inspectors exchange views with visiting inspectors, government inspectors, insurance inspectors, and we also attempt to have our inspectors spend as much time as possible with those gentlemen to learn what is being done in other places and get their views.

It is, of course, preferable, in my opinion, that the plant inspector have sound engineering training. Not so much for the particular technique which he may acquire on some particular line, but because I believe that the engineering training teaches a man to reason fundamentally and logically from cause to effect. A man must be able to take his problem, analyze it down to the basic principles, and then work out his solution. The man having such an education, of course, develops the self-confidence that an inspector should have. As soon as he has self-confidence, he should be convinced that his judgment is good, and yet he should not be so self-confident that he becomes arbitrary and is unable to accept opinions and ideas from outside.

GENERAL DISCUSSION

MR. LITTLE: I think it is splendid to have the safety man, the safety engineer and inspector, talk and then have a good manufacturer come up and tell us how we look.

The subject is open for discussion—"What Constitutes Good Inspection?"

MR. GEORGE WILES, New York Central Railroad, Utica: I have been upon the safety committee for the last two years, of the New York Central. I am a yard conductor and I don't believe there is any other occupation that offers any more hazards than the railroad. We have brought about conditions today, that I might say are surprising. The committees which have been installed all along the line have endeavored to make "Safety" the motto.

We have a safety committee which goes around among the shopmen, and I have endeavored at times to bring about cooperation with these men. I want to say that the ground work of safety is based on the man himself. When you say that this man is careless, right there is where you begin with safety. That man needs it. Now, how is he going to get it? He gets it simply by the committeeman going to him and offering suggestions to him and recommendations.

We have in the last year from June, 1918 to June, 1919, never had one accident in our yard. Not one, in either yard or train service, or round-house. We have switching service better than ninety-seven per cent efficient, with only three per cent of abrupt handling in our yard. I say, gentlemen, that safety is a creed, and the war has intensified that creed. I say to you men here today, that what we need today is cooperation with the employee, and when you get that you are bound to get results from that employee.

We are living in the greatest period of the world's history. The war, which as an armed combat, ceased slightly more than a year ago, has changed many of the important fundamentals upon which this country was built. The entire industrial structure was altered to meet war conditions, and now must be again changed to meet situations resulting from the victorious peace accomplished largely through the indomitable will to win of our army and navy. We owe a real duty to those men who returned and to all people who in even a small measure contributed to this achievement, but we are everlastingly obliged to those men and to those women who did not come back from foreign service and to their families and dependents. The war taught the people of this nation as nothing else could have done that the most precious thing in the world from a humanitarian standpoint, and the

most valuable economically, is human life—this greatest of all assets of individuals and of the country itself. I take as a matter of course the fact that our duty as safety men and women in the national developments is clear-cut and without equivocation or reservation. I subscribe firmly to the belief that safety is more than the conservation of life and limb, that it will do more than any single agency of which we now have knowledge to create industrial conditions and practices and principles which will render the employment of the man who works not only safe, but satisfactory and economically just from every standpoint.

FROM AN ECONOMIC STANDPOINT

Safety is basic in any business where physical hazard is involved, for if you will look about you I venture you will perceive that the best railroad is the safest railroad and the most efficiently and satisfactorily operated from the standpoint of the people, the government, the owners of the property, and last, but very important, the men who work on that railroad and who have it in their hands to make it a successful organization or a mediocre enterprise. No right-thinking student of current national events can fail to discern these indisputable facts.

Some of us are disposed to be altogether too conservative and reactionary in the activities we employ in conducting this work, and sometimes we are apt to underestimate the value which comes from the financial expenditure required to carry it on. I do not subscribe to the theory that within intelligent and reasonable limitations it is possible to become over-zealous or to overdo in a matter of this kind. We must, from the very nature of the work, consistently and continuously develop new plans and methods for creating and sustaining the interest of railroad employees, and of all persons subject, directly or indirectly, to the hazard of railroad operation. It is just as good business, if we must for the moment regard the matter from a monetary standpoint, to expend money for safety activities as it is to make investments for approved devices which will conserve fuel, increase car loading, improve efficiency or reduce maintenance cost. It is a great deal more important, and, as a rule, will pay materially larger returns.

SAFETY COMMITTEE MEETINGS

If I were the general manager of a railroad I would regard the meeting of a general or central safety committee as the most fruitful opportunity, with a minimum expenditure of time and effort, to improve the regularity and efficiency of operation. So it should be with the superintendents, master mechanics, and other line officers in respect to the monthly safety committee meetings which they have with officers and employees. If the chairman demonstrates real interest in the subject by regular attendance at the meetings the members generally are very apt to become imbued with the importance and possibilities of the work. Upon the chairman depends very largely the success of the meeting, and we would do well to devote a large amount of time and energy to strengthening this feature of our organization.

A fact which will not admit of debate, and which is of prime importance

in the relation of safety to railroad operation, is that when experienced men are taken out of the service because of casualties the employment of new or inexperienced men in their stead not infrequently causes additional casualties to occur, because of the lack of familiarity with the work in hand; and always such a situation decreases efficiency and output, and otherwise costs money and causes hardships. The fact emphasizes, too, the real necessity for constructive thought, the action in relation to the safety education and training of the new man in the service, and of the employee who is promoted or changed from his customary occupation to one with which he may not be familiar.

PUBLICITY AS AN ASSET

Another of the aims and purposes of the safety section is to secure liberal publicity. Not of individuals or of the safety section or of railroads, but of the work we are doing and the necessity for it, of the altogether too large number of railroad men who are killed and injured every year in the business of operating the railroads of this country; of the appalling number of people who are killed and injured each year while wrongfully trespassing on railroad premises, and of the alarmingly increasing number of people who meet death and injury while passing over highway crossings. Publicity is a wonderful thing. It furthered the sale of billions of dollars of securities for the government during the war, it conserved food, clothing and fuel for the people associated with us in the war, and performed many other services. It will be a wonderful help in accident prevention if it is judiciously used, not only with employees but with the entire community served by the railroads.

Concretely, this publicity in the case of employees should be in the form of bulletins, posters, pamphlets, casualty statements, and such other data and information as may be deemed advisable. We must never lose sight of the fact that safety is fundamentally a work of the employees who perform the physical tasks incident to railroad operation. They are almost entirely responsible for the accomplishment heretofore made in this great movement and will be the strength and power for good which will come in the future.

The President of the American Federation of Labor, who is remarkably qualified to voice sentiment of world importance, recently said: "Let us of America face these new labors, then, in the spirit of individualistic mutuality—in the spirit of real democracy." It strikes me that we people, especially those of us who are devoting our time and energy to safety—and most of us would, if need be, give our very lives to the cause—can well afford to pause and reflect on the wisdom of these few words. The successful culmination of the unsettled state of affairs in this country as they exist to-day depends largely upon the application of such principles as these, and we safety men will do well to constantly keep them in mind and to practice and preach them.

DAYS OF SERVICE

These, gentlemen, are days of service, not service to one's self, but service to our families, to our fellow workers, to the community in which we live, and to the greatest of all nations. It has been said that a life without service is a life without hope or happiness. Service to-day is almost a creed. The war has made it so. And the new industrial era which has come as a fitting

climax to the war has intensified that creed. The teaching that we have had in this direction is the greatest inspiration that I get from this wonderful work of safety—that I am performing a real service to mankind. So it should be with you and with every officer and employee of the properties with which you are associated. More especially should it apply to the safety committee members. The idea of service must predominate our every thought and action to the end, which is wholly possible of attainment, that we will demonstrate to all the people that we are men among men, each man being safe himself and having proper regard for the safety of other men.

Thus, we will truly make railroading the safest occupation in the world. It can be done. You are the men to do it, and I have an abiding faith in the fact that the railroad men of America are equal to the task.

MR. LITTLE: On account of the delayed train, Mr. Price and Mr. Young have not yet arrived. We will continue this discussion for a time.

MR. ROY S. BONSB: Good inspection should result in practical recommendations. In order to get your recommendation over, it should be so stated and outlined as to arouse interest on the part of the person to whom you are making that recommendation. Some recommendations which I have looked over in the last few months simply say, do so and so. They don't tell the manufacturer how to do it, and the manufacturer gets a wrong idea and says it interferes with production. He doesn't do it, and instead of helping him it antagonizes him. You should state the hazard very definitely, what will happen if that hazard isn't removed, and then the remedy telling him exactly how to do it. Be very careful in making that recommendation that it doesn't interfere with production.

There are several cases where recommendations have been made by insurance carriers, where the inspector has very arbitrarily said a thing should be guarded, but he has not told him how, but says it must be guarded. He is asked how it should be guarded and he tells you that it is up to you to guard it. I am just bringing that out so the inspector in his work will help the manufacturer and tell him how to do these things.

Another thing, the value of an inspector should not be judged by the number of inspections he makes, but by the quality. Some inspectors feel, in order to hold their jobs, they must send in a report of a large number of recommendations. But he will be much more effective and much more welcome if he will make a few good suggestions and not try to load down with a big pile of suggestions more or less useless.

MR. T. J. CAHILL, President, Bricklayers' Union No. 34, Brooklyn: What constitutes good inspection? We have insufficient inspection. I refer to a certain operation in Long Island about one week ago when the scaffolding broke. Three of our men were killed, and five others injured who will never recover.

MR. LITTLE: That was a most dreadful accident. How did it occur? Do you know some of the circumstances? Hadn't it been inspected?

MR. CAHILL: It had not been inspected.

MR. LITTLE: Wasn't the scaffolding put up right?

MR. CAHILL: If it had been put up in conformity with the law and the rules of the Industrial Commission that accident would never have occurred.

Unfortunately the scaffolding code doesn't take effect until about the first of the year. I will just quote the statement made. You see, we received the notification of that accident at such a late date we couldn't send any of our officers or inspectors to inspect the scaffolding and they had removed all the debris when our men got there with the exception of a small portion. The statement they gave to our business agent was, "It was due to the breaking of a guy rope." Our business agent, being a practical man, stated that in his opinion the collapse was due to the overloading of the scaffold.

That is one of the provisions we have provided against in the present safety code. Now, I understand that the building construction, the major part of that work was done by small men, small contractors. The large operators are so very few that they can have inspection on their operations, but the smaller contractors are not in a position to have inspection. Now, at the present time, there is only one large construction firm, to my knowledge, which employs a safety engineer.

MR. A. E. DAVIDSON, Chesebro-Whitman Company, New York City: I would like to ask a question and put it up to this body. Who, in your opinion, should be held responsible for inspection of scaffoldings and construction work? At the present time we have nobody covering the inspection of scaffolding. I think the Industrial Commission should be given more inspectors and permit them to go out and see that the construction work, relative to the conservation of life, is just as important as factory work.

MR. LITTLE: Is Mr. Gernon, Chief Factory Inspector, here? Does any one here know how short the State Industrial Commission is of adequate inspection?

MR. BROOKER: I can give you no figure as to the shortage, except that the Commission does make inspections, I believe, only upon complaint. I am not an authority on that, however.

MR. LITTLE: I suppose this accident illustrates a great fact, that State inspection can't always be at every small plant. They cover them as best they can with the force at their disposal.

Second, the large well-equipped industry is looking out for safety in its work quite well, where improvements can be made they are on the job. But, the small employer isn't in a position to do that. He has not a good organization, does not have large capital, and there is where the thing is going wrong rather than in the large plant where good organization and good inspection are.

Mr. Havens, what can you tell us of the conditions of the accident on Long Island?

MR. L. A. HAVENS, Chief Factory Inspector, State Industrial Commission: I was out in the lobby and some one told me that the Industrial Commission was being held responsible for lack of inspection in relation to that accident. I want to make it clear that the inspection of the construction of buildings in the city of New York—Long Island is a part of New York city—is completely in the jurisdiction of the City Building Department and the Industrial Commission has nothing to do with it.

MR. LITTLE: Any one else on this subject, "What Constitutes Good Inspection?"

MR. PALMER: I would like to speak of the point raised here, that no doubt this State of New York, which perhaps is fortunate in having more inspectors

of various classes than any other State, is short of inspectors as compared to the broad field that she has to cover. But, it appears to me that in a state or municipality, the same as in an industrial plant, you have to put the responsibility to a certain degree up to the individual department. In this case, it would be up to the contractor.

You never will have, as I see it, sufficient inspection to inspect every scaffolding that goes up, and you will have to aim at another corner of the diamond and that is to educate the contractor in the construction industry along proper lines. They should, as an individual department of a plant should, assume their own responsibility. If they carry compensation insurance, perhaps they may be able to call upon their carriers to educate them properly so that such an accident as cited will not recur. But, I don't think you can shift the responsibility entirely on government agents. They act in a supervising capacity, the same as your safety department acts in a plant.

I am of the opinion that you can not properly hold one individual responsible for all of the lives and safety of seven to ten thousand men. It is up to the thousands of operators, it is up to the operating end, as I see it.

MR. LITTLE: I think we are now on the schedule, as Mr. Price can't be here until half past twelve, we will change our program and have his address at two o'clock. Just at this time we will take up "The Surgeon's Part," and for this important topic we have been able to secure the presence of two men, two surgeons of wide and various experience, and technical skill and who know the plant point of view. First, the paper on "The Surgeon's Part" will be read by Dr. F. M. Furlong, Commander, Medical Corps, U. S. Navy, Retired, New York City.

When I first learned of Dr. Furlong he was Medical Officer at the Navy Yard, and the Commissioner at the Navy Yard said we were getting about the best medical service at the Portsmouth Yard he had ever seen. We subsequently became better acquainted and while he served his time in the navy, he is a specialist in internal medicine in New York city. He came to give us this address because he knows industrial surgery and I prevailed upon him to be with us.

THE SURGEON'S PART

By DR. F. M. FURLONG, COMMANDER, MEDICAL CORPS, U. S. NAVY, RETIRED,
NEW YORK CITY

Mr. Chairman, Ladies and Gentlemen: After hearing the addresses and discussions of the safety men here, one would think that everything in industry belonged to them, but I want to show you this morning, that we medical men also have a part in this question.

Having been recently relieved from duty in the United States Navy and entered upon the private practice of medicine in New York city, I am glad to avail myself of this opportunity to bring to you the point of view of a military surgeon on the industrial situation concerning its medical phases.

For the past three and one-half years I was, in addition to my other duties, the chief medical officer of a government industrial plant employing nearly 6,000 civilian employees at the Navy Yard, Portsmouth, N. H.

Though the military surgeons' work in war time is different from that of his civilian brethren, his work in time of peace is much the same; it does not take a different kind of poison to kill a cat on a battleship than it does in a household kitchen.

Medical officers of the navy serve at sea on battleships, cruisers, on foreign shore stations with marines and on shore duty in the United States at naval hospitals and navy yards. Many of the latter, in addition to their military value, are large industrial plants engaged in work essential for the upkeep of the navy. In addition to the *materiel* supplied by contract, the navy builds ships, torpedo-boat destroyers, submarines and smaller craft, manufactures guns, torpedoes, engines, anchors, munitions, explosives, electrical apparatus, etc. The largest rope manufacturing plant in the United States is at the Boston Navy Yard.

During the war, the Navy Yard at Brooklyn employed nearly 20,000 men, Boston 15,000, and other stations throughout the country likewise employed large numbers of civil employees. In April, 1916, I was detached from duty on the battleship *CONNECTICUT* and assigned duty at the Navy Yard, Portsmouth, N. H. On my reporting there, the officer whom I relieved said something to this effect: "This is a fine station; the duty is pleasant and agreeable, but there is one thing that is going to give you a great deal of trouble and annoyance and that is the industrial portion of the duty. It is the meanest part of the job."

At one time navy yard duty for medical officers was regarded as congenial and attractive but since the passage of the first Federal Compensation Act, about 1908, which practically allowed government employees to do as they pleased about the treatment and reporting of their injuries, the word was passed around the service that navy yard duty "was not what it used to be."

There were two causes for this state of affairs: The employee knew he was not compelled to be treated by the naval surgeon for his injury and in many cases preferred treatment by his own physician and the naval surgeon was not seeking a disagreeable controversy about a matter over which he had no control. In many cases the employee looked upon the naval surgeon with distrust and suspicion.

Subsequently Congress passed another act, known as the Federal Compensation Law of September 7, 1916, which provided, among other features, for the organization of the United States Employees Compensation Commission and the treatment of injured employees by government medical officers, unless the injured employee refused it, in which case he had to pay his own bills.

The responsibility of treating the injured was therefore clearly placed on the government and steps were taken by all naval medical officers attached to industrial plants to carry out the law.

Though this act is undoubtedly the most liberal compensation law in the country for the employee, it was found that many of the workmen did not, and would not, apply for treatment and some of those that did, did so with bad grace. In this connection the Federal employee is no different from employees in private establishments, and it is to break down this mistrust of industrial surgeons that should be the first task of any doctor that becomes attached to an industrial establishment.

In my opinion the causes of the employees' opposition to the care and treatment by the government surgeons were:

First: It was a radical change from the former regime.

Second: He was not allowed the choice of his own physician, except at his own expense.

Third: Free treatment; it is well known in the medical profession that advice and treatment given gratuitously are not as highly regarded as when paid for.

Fourth: The opposition of certain local physicians who catered to that class of business; and

Fifth: The prejudices and whims of certain workers who felt that their "rights" were being interfered with.

It is therefore with pardonable pride that I am able to tell you that this hostility was overcome when they saw the sincere efforts made in their behalf in the providing of modern and up-to-date equipment and facilities for their care and treatment as well as the selection of a medical personnel specially trained for the work.

Shortly after the United States entered the war, one of our employees sustained a fracture of the thigh while at his work. He was offered treatment which he indignantly refused and insisted on being taken to his home, about 15 miles distant in a rural community. As our ambulance could not be spared from the navy yard for so long a time, he was made as comfortable as possible and placed in one of the large government motor trucks, and accompanied by two hospital corpsmen and two fellow workers he was transported to his home, where, upon arrival, his own physician refused to accept the responsibility of his care. From there he was driven to a large town several miles away and placed in a hospital. Some months later he had to pay several hundred dollars for surgeon's fees and hospital care which the Government had declined to pay as he had refused the treatment offered by the Government.

The point of this story is that through the whims and prejudices of one man, the day's use of a motor truck and the services of five men were lost to the Government in time of war, when most needed. For this he was severely criticized by his fellow employees. Later on he came to me and reproached himself as being very foolish and stubborn and became one of our best friends.

THE TYPE OF MAN REQUIRED

It is a mistaken idea that any one possessing a medical degree can be an industrial physician, the practice of which is just as much a specialty as any other field in medicine.

In addition to his equipment in the science of medicine and surgery, his work is in the art of handling people. He should be resourceful, versatile, sympathetic and at the same time forceful. He should be broadminded, interested, sincere and patient under all conditions no matter how annoying and irksome. In the naval service we call this aptitude and all officers are marked on this qualification which, in the higher ranks, means whether or not they are going to be selected for promotion. In other words, he should be temperamentally fitted for the job. He should have a knowledge of industrial and occupational diseases, particularly those likely to occur in his own

plant; also of medico-legal matters, particularly the compensation laws of his own State. He should have initiative and not be backward in making suggestions tending to improve conditions. He should be a sanitarian and keep in touch with all matters relating to public health, either within or without the establishment in which he is employed. He should become acquainted with members of the medical profession in his vicinity and in this way learn many things and prevent many conditions which may cause annoying misunderstandings.

At Portsmouth, I made it my business to become acquainted with all of the local profession and I number some of them among my best friends to-day. Though some of them were alarmed at the prospects of the Federal Compensation Law curtailing their practice among injured employees, the same ones told me later that the law was an excellent measure, as there had been cases where unscrupulous employees threatened to take their families out of their practice unless they gave them certificates of disability that either did not exist or were not warranted by the symptoms. Above all, the industrial surgeon must be careful to use judgment in the treatment and handling of all conditions which may be the basis of claims, and he should always have in mind that the smallest wound if untreated may result just as disastrously as a perforated ulcer of the stomach.

In this connection I shall quote from Dr. John J. Moorhead's text book on Traumatic Surgery the following:

The profession at large has become awakened to the problem of accident surgery and incidentally has come into a new relationship with the injured because of the operation of compensation and allied laws; likewise the victims of accident, civic, judicial, legal and other agencies are exacting from the physician a higher grade of care and placing on him an added responsibility.

The writer has long been of the opinion that cases of injury have not received the same care and attention accorded other surgical patients and has often realized that the properly treated Pott's fracture or infection of the hand is a far greater manifestation of the surgical art than the successful removal of an appendix.

FUNCTIONAL CO-ORDINATION

There is a crying need in the complexity of modern industrial process for men physically adapted to do the work and it is highly illogical to put men physically incapable of doing a job in the position where they may themselves be seriously injured or cause injury to others; for example: an epileptic operating a crane or driving an automobile truck; a man or woman with St. Vitus dance or with stiff rheumatic joints of the hand assembling the minute parts of an intricate and delicate mechanism, or a man with impaired vision driving a locomotive. It would be little short of manslaughter to send a man suffering from organic heart disease or high blood pressure down in a diving suit. The employer is compelled by law to meet, as a part of his expenses, the cost of compensation from injury and he should be entitled to make selections at least sufficient to prevent the placing of the mentally or physically unfit in positions where they may be a source of tremendous expense, and on the other hand, the employee should not be subjected to the harm or injury that improperly selected men can do when employed in such work. It seems ridiculous to add the extra burden to the cost of manufacturing when the simple expedient of a physical examination will not only prevent the loss but will more certainly place the man where he becomes an efficient workman and perhaps continues at work for many years instead of

being a cripple due to untimely injury. Such selection does not tend to prevent the employment of men below the average physical standard, but it does tend to place them where the skill and quality of all men may be used to better advantage, thus making the plant more effective as a whole.

One of the results of the draft showed that an appallingly large number of men were either unfitted for military service or possessed physical defects which impaired their usefulness wholly or in part. If this condition existed in war time, it certainly exists to-day.

The average complement of one of our dreadnoughts is one thousand men. These one thousand were physically selected from a great number of applicants for enlistment and they are able to perform duties which would require a much larger force of unselected men. This would be just as true in an industrial plant if thorough physical examinations of the applicants for employment were made.

The high physical quality of the crew of a battleship is maintained by frequent inspections of personnel, living quarters and food. It is well known that on the whole men discharged from the Army and Navy were in better physical condition than when they entered the service. In exactly the same way a high-grade industrial medical service will build up and maintain an efficient, healthful and contented industrial force. In view of the competition that prevails in a modern business, both employers and workmen must increase their efficiency, maintain a higher average of health to secure the most for the effort they put forth. A healthy mind and a healthy body will do more to maintain a sane relationship between the employer and the employee, a man and his family and the different members of a community than any other single thing.

The question is frequently asked why the physical examination for the military services is more rigid than that for industrial work, as it is well known that men with flat feet, varicocoeles, deformities from old fractures can become efficient workers and live to a good old age. The answer is very simple; men accepted with these conditions occasionally use them as excuses to avoid hard and irksome jobs or to avoid being sent to some remote foreign station where the life and duty are not as agreeable as at home, so the main thing to do is to eliminate such persons at the time of examination.

HEALTH A PREREQUISITE TO GOOD WORKMANSHIP

Cases almost without number could be cited showing the relationship of health to good workmanship. I shall recite a few instances:

An employee of our smelting plant reported with symptoms of spitting of blood. His family physician told him that it was caused by the irritating fumes of copper and zinc; the simple expedient of examining the patient's sputa disclosed the presence of tubercle bacilli, showing the case to be one of tuberculosis.

A young woman employed in assembling the small parts of electric apparatus complained of muscular tremor and nervousness which interfered with her work. Physical examination showed she had Graves' disease, otherwise known as exophthalmic goitre.

A painter reported with severe cramps in the abdomen, though no other signs of lead poisoning were noted. He was put to bed under observation

and in a few hours the pain localized over the appendix region. He was transferred to the hospital where an acutely inflamed appendix was removed.

DISPENSARY AND FIRST AID TREATMENT

A modern plant should have a well-equipped dispensary. It should be centrally located, well lighted and have a pleasant atmosphere. Those applying for treatment should be received in a human and humane manner. In addition to reception room, surgical dressing room, operating room, there should be small wards for men and for women. It is essential that there be a certain number of beds for cases temporary in character, or such emergency cases as cannot bear further transportation to a hospital. If women are employed, one or more female nurses are essential and no woman should be examined except in the presence of a nurse.

At Portsmouth, all original cases were recorded on cards and notes made of all subsequent visits with conditions found. In the recording of cases, no difference is made between injury and illness, as some of the latter sometimes make claims. The recording should be accurate so as to have data in case claims are filed. On the termination of a case the card is filed in a strictly alphabetical manner as are the names in a city directory. It is interesting to note that in this way the cards of the same employee fall together. One employee was found to have twenty-two separate and distinct cards of injury and illness in one year! It is needless to add that his case was investigated. Another employee who had a number of cards showing a tendency to get hurt was found to be blind in one eye and to have poor vision in the other (4/20's).

I would like to say that this was discovered not by the medical department but by Mr. Rausch, the safety engineer at that time. Another thing, this man didn't know it either. He couldn't see across the street until he was given the proper glasses. He had grown up without knowing that it is possible to see across the street.

All cases likely to become claims for compensation were thoroughly examined regardless of symptoms. What is wanted by the compensation commissions is facts, not theories. Cases suspected of malingering or exaggerating their ailments must be thoroughly examined so as to eliminate all possible causes and in this connection patience of the medical officer must be cultivated to the nth degree. It is the duty of the plant surgeon to co-ordinate with other departments. Where misunderstandings with other departments occur, instead of writing complaining letters, I obtained better results by an interview with the head of the department concerned and in every case a satisfactory adjustment was made.

The question of applying first aid at the time of injury has been the subject of much discussion. At Portsmouth this practice was not permitted in shops convenient to the dispensary, as many employees will then ignore the dispensary, and if complications subsequently ensue, a great deal of trouble occurs on account of the case not being recorded. Two or more employees of every shop were instructed in first aid work and acted as our representatives. It was their duty to start the injured employee to the dispensary or, if unable to go, to summon the ambulance. In this way the work was so organized that the whole shop was not upset in case of an emergency. Before

this scheme was instituted we received many false alarms. In one case we received a telephone call and the sender was so excited that he could not tell where the case was and we never did learn.

It should be the duty of the industrial physician to investigate all conditions having a bearing on the health of the employees, sanitation, fatigue, recreation, food, etc.; at government plants the regulations are very clear in this respect and he is obliged to make frequent inspections within the station, and investigate all conditions without the station having a bearing on the health of the enlisted and civilian personnel. At Portsmouth amicable relations were established with the State Boards of Health of Maine and New Hampshire, as well as with the local boards of health of the towns in the vicinity of the navy yard. In this manner timely information was secured of various epidemics.

At one time, twenty cases of smallpox appeared in the community, two of which occurred among the navy yard employees. Other epidemics in which co-operation was maintained were scarlet fever, influenza and diphtheria. The sources of food supplies were inspected and if found to be unsanitary their products were excluded.

One of the milk producers supplying milk to the navy yard restaurant was found to have recently recovered from typhoid fever. On the whole, the milk supply of that vicinity was very unsatisfactory and, upon my recommendation, the commandant issued a general order prohibiting all milk from entering the station unless it was pasteurized.

The subject of industrial medicine, surgery and hygiene is now coming to its own. Some of our leading medical schools are conducting courses in this specialty. At the recent clinical congress of surgeons held in New York from October 20 to 24, 1919, one entire evening was devoted to this subject.

If works are employing industrial surgeons merely to comply with the law, they have taken the one step that will defeat its object, as they have complied with the letter but not with the spirit of the law. If a man puts in a new process or machine he does it because he is convinced of its value and not because of a fad or custom. The industrial surgeon should not be employed for any other reason than that he is an important and necessary part of a well organized plant.

It has been shown conclusively that those plants which maintain an efficient industrial medical service have had a minimum amount of absenteeism, changes and losses by illness and injury. A conservative average of a number of plants of the days lost by preventable illness that could have been detected by competent medical supervision is about seven days per employee per annum. The prevention of even a small part of this loss by proper surveillance of the health of the employee and the proper treatment of minor injuries would furnish a large part of the funds to maintain a medical department.

There should, indeed, be no doubt about the advisability of establishing a medical service in industry; it is not a question of sentiment; it is not a question of humanity; it is a plain business proposition.

MR. LITTLE: I became thoroughly convinced from the point of view of compensation that the injured workman is benefited more by first-class medical service than by the monetary compensation we pay him by check.

The subject will be further discussed by Dr. P. H. Hourigan, Larkin Company.

DR. P. H. HOURIGAN: Mr. Chairman, Ladies and Gentlemen: I have listened with a great deal of pleasure and profit to the comprehensive, concise paper the gallant soldier, Dr. Furlong, who has recently retired from doing his bit to make democracy safe for the world, has presented. I don't feel that I can add anything to it. The only thing I can say, is to talk about my own experiences as a physician and surgeon to the Larkin Company.

I better tell you, so that you can get my after remarks a little better, the Larkin Company is a company located in Buffalo. Originally it was a soap company and some thirty years ago changed into what is called now, a mail-order house where we manufacture and sell almost anything from a pin to an anchor; or anything you find in the house from the beds, rugs, to women's fancy frills and furbelows, and such things.

We have there industrial leaders with the vision of what the industrial doctor should know and should do, that is far beyond the possibility of any surgeon I have met, and far beyond my capabilities.

The doctor, I suppose, originally picks out the practice of medicine to give expression to that thing which is common with all of you, namely, a willingness to give service; a willingness to help his fellowmen. That thing is fundamental, that feeling is fundamental in the human heart. It is evidenced by all classes whether they are the leaders of industry, whether they are the leaders of labor, and you see it evidenced in the actions and lives of other great leaders,—Lincoln's great speech at Gettysburg holds that thought in strongest phrase "with malice toward none, with charity toward all."

I suppose that Christianity has gained its numerous votaries because it is a religion that personifies self-sacrifice as against the religions which it supplanted, which personified selfishness.

So, as the doctor picks out this business in order to secure that which is really our greatest enjoyment, the opportunity to serve, he finds in that profession an opportunity to serve and the tools are put in his hands so that he can more easily take advantage of that enjoyment. Industrial medicine offers that service in greater measure — take in my own case, the ordinary doctor may be able to, we will say, make visits (if we count his office visits and his house visits) on an average of ten a day, that is a fair average. In the Larkin plant, with the education that comes from industrial leaders, and the ability to develop an organization, that possibility and that amount of service was increased last year, ten fold. Instead of doing the ordinary doctor's calls of three thousand visits a year, we were able to do thirty thousand, and, the coming year will figure between — you understand I talk of office visits and dispensary visits and outside visits — forty and fifty thousand.

The thought comes to me, as Dr. Furlong has been in the navy, that a doctor is drafted into the army rather suddenly. As a doctor of general practice, somewhat over a quarter of a century, I have reached the conclusion that a doctor is drafted into the industrial medicine field rather insidiously. He does a little work along that line, he likes it; he does a little more along that line, he likes it, and pretty soon they have got him. And, you can't get away from the work. His condition reminds me of a story I heard yesterday. Like the Irishman in the story, it seems he landed on Plymouth Rock from the Mayflower, and was interested in the woods about there. He had

gone out to look around and see things — there were two Irishmen in this story. They saw a little, live, wild animal, the American wildcat, and they took after it. They were gaining on the wildcat when it took to a tree, got up into the thick foliage of the tree. One Irishman went up the tree to chase him down; he got up above the wildcat and the wildcat got down, but the fellow up in the tree couldn't see whether the fellow below had him or not. He cried, "Mike, have you him?" and Mike said, "Yes, I have, but if you have a spark of decency or manhood about you, you'll come down and help me let go of him." The industrial physicians don't find any chance of letting go.

Doctor Furlong speaks of the difficulty — we employ between four and five thousand people out there — of getting people to come to the plant doctor for service, we probably have one such case a year. We find a certain enjoyment in realizing that the fellow who goes outside gets rotten service.

The Larkin Company has never, at least to my knowledge, carried any insurance against suit. They have handled their accident problems with the individual direct. When he was hurt their policy was to take care of him, give him the best medical and surgical service they could buy, pay him his wages, and, when he was on his feet, tell him to fight for his rights. If it was through suit, to resort to suit; if it was with direct dealing with the Larkin Company, do business with the Larkin Company. We have never had a suit — well, I believe we had one. That was a case where a girl with an injured finger was offered a settlement for a thousand dollars. Her lawyers wanted three thousand, and suit was brought. She got settlement for two hundred and fifty dollars, that is what the jury gave her.

The type of man for industrial medicine is being found and developed all over the country. We see him in the wonderful Dr. Moorhead, and Dr. Furlong has quoted from his book; we see him in Dr. Shoudy, of the Bethlehem Steel Company, handling his forty thousand men; we see him in your Dr. Chaffee here; we see him in Guyer of Cincinnati, who has been able to gather together from the industries, fifty thousand dollars and establish a chair of industrial medicine in the University of Cincinnati; we see him in Mock of Chicago who gave up his position in Washington to go into industrial medicine. These men have a vision of possibilities, and are materializing that vision in the handling of men. When a man lives long enough he learns to handle men, learns to place them; he learns the difference; he learns that the man from Poland isn't a Polack; he learns that there is a difference between the Russian Polack and the Austrian Pole, and the German Pole. He learns to realize the effect German methods have had upon the German; he learns that an Englishman is not an Englishman, but a Britisher; he learns not to make the mistake of charging a Tipperary Irishman of being a Carsonite; he learns sometimes that the hunkie knows more about democracy and appreciates democracy more than the American laborer. You sometimes run across an experience like this. Before employees go to work at Larkin's we make what we call a health inspection. During my examination of a prospective employee I asked him how far he had been in school. He said he had been in the gymnasium, and I frequently found this fellow going to work and would walk with him. He could quote Demosthenes' Philippics in the original. I swung him over to Latin and he would start along any place you would want him to in Cicero's orations against Catiline. You can imagine I was kept pretty busy by this time, for fear he would turn and ask me some questions.

The Greek laborer — if you want to brush up on your Greek — have a talk with the ordinary, fair Greek laborer. If you want to learn what Grecian history has taught about the value of different systems of government, which is best, whether it is an autocracy or monarchy, whether it is a despotism or whether it is the benevolent despotism, or whether it is our own well loved democracy,—sit down, forget about the dirty Greek, and talk to him. The Italian, of course, when he comes in—in my experiences I find them coming in with a large arm, inflamed tendon, and you want that arm rested, and you want to know where he works. He tells you. “All right, who is the boss?”

He answers, “Jimmy, The Nut.”

“Jimmy, The Nut?”

“Sure, they call him Jimmy, The Nut.”

And, you think for a minute—Jimmy, The Nut—well, it comes to you, Jimmy McNut!

Now, Dr. Furlong suggests close contact with the Compensation Commission in order to do these things better. We can only say, in Buffalo, that we have learned and benefited much from the deputy commissioners, Mr. Lewis and Mr. White; they have always been willing to give us service and under their directions we have worked, and from their lips we have learned the rules, and we have tried to live up to the compensation rules and compensation laws in letter and in spirit, as a matter of pure economy.

Now then, we are trying as industrial doctors to put over to the working-men of the industries, and employers of the industries, the knowledge which the doctor possesses. If the physical examination shows they are defective, instead of saying “Get the wax out of the ear,” we find it a practical problem to show the man that there is wax in his ear and the doctor should get it out and his ear is improved. His eyes don’t measure up right, he should wear glasses; teeth show pyorrhea and sources of local infection, they should be corrected; tuberculosis cases handled properly. The industrial doctor should join with the local health authorities in securing and enforcing every measure that he can which will help to upbuild the health of the locality in which he lives, so that the upbuilding of the general locality will help his own particular industry. He must try to do everything he can to build the individual, and in upbuilding the individual make the industry, make the community stronger, and make the State and country better.

REMARKS

By R. M. LITTLE, PRESIDING OFFICER

MR. LITTLE: I am informed that there are six hundred and forty-eight manufacturers in America, each of whom have one thousand or more employees. This doesn’t include the great transportation companies and the mines. I assume that there may be twelve, fifteen, or twenty thousand corporations, mines, manufacturers, etc., that have one thousand or more employees in our country. Only a small per cent of them, however, have incorporated industrial medicine and surgery as an integral part of their business program, and yet health is the first requisite to a normal life. Health is the first necessity of a productive life; health is the keynote of production, and we are never going to get out of the business of this country the production possible, until we commence to deal more fundamentally and practically with this problem of health.

Now, there are a good many companies that have discovered its value, it is proving its worth over and over again. Dr. Hourigan has named a number that have been successful. Perhaps in spending money where they get larger returns in the improvement of their personnel, the general health conditions and sanitary conditions are better. That human touch that the doctor mentioned, that by just the investment in a good, well qualified surgeon, make him a part of the organization, make him a part of it as he is a part as much as the employment department is. Make him a part of it as Lafferty is at the Westinghouse; as Clark is at the Norton Grinding Company in Worcester, or Guyer in Cincinnati. Go across this country and the best business organizations have come to recognize this primary fact of life, that health is its beginning, and the conservation of health is a prerequisite. You can't have good workingmen, you can't have good production, you can't have it in quantity or quality without health.

Therefore, gentlemen, while we are perhaps here today, not many of us immediately in touch with it, and think it may not be especially related to this problem of safety and of production, I think from my point of view it is one of the foundation pillars of the whole movement of industry. The industrial, surgical, medical man should be a part of the management.

If we have in this country three million lost time accidents, the loss of time in many cases amounting to four weeks or more; and if we are having more than twenty-two thousand industrial deaths each year, and about fifteen thousand men suffering functional losses—loss of the hand, foot, arm, ear, or eye—or the disease of physical incompetence, isn't there a tremendous field of service for the industrial surgeons?

I think many of you know Dr. Shoudy, I happened to be in his little hospital at the Bethlehem Works the evening he received his appointment as general surgeon for the entire corporation. Five years before he was sent up to a little dispensary on the second floor that was in ill repute both among the management and the men. They hadn't been doing much and he was so discouraged that he even went down to Philadelphia without unpacking his trunk. But, the doctor to whom he reported the conditions, said to him—"Look here, young man, if Charley Schwab doesn't know you are on the ground at the Bethlehem Works, it is up to you to show it."

He did, he fitted himself in, he went to work with imagination and energy, he got acquainted with the management and the men and down there today he has one of the best equipped hospitals in the country. And I want to say to you, Harry Shoudy is an important factor to the whole management, not in the technical treatment of injuries, but a man with mind and heart moving on health principles helping to stimulate that whole industry and bring it to a higher level.

Physical conditions must be right for safety, for health, and sanitation. We may have healthy working people and if they conserve their health they will lengthen their years.

Another point: Dr. William Mayo, at the opening of his remarkable address at the Lincoln College of Clinics, made the statement, that since the civil war the longevity of an American's life has been increased fifteen years, and in the next generation it would be increased ten or fifteen years. What does ten or fifteen years mean? Ten or fifteen years for a man to expand his days, to support his family, to bring his children past the school age and not be left

orphans and his wife a widow with a lot of little children to take care of. But, that workman's years will be extended, his strength will be conserved, he will be productive and gain something for himself and family, therefore, you enlarge and enrich human life and in doing that, you increase the commodities that make human life comfortable.

Business at any time, whatever it may be, resolves itself back to human life and its enrichment. All the commodities that we manufacture, that we transport, are after all, for the use of human folk, and human folk are the center of this world's interest and the working man is entitled to the best we can give him.

WEDNESDAY AFTERNOON, DECEMBER 3

SAFETY MAN'S DAY

PRESIDING OFFICER: R. M. LITTLE, DIRECTOR, SAFETY INSTITUTE OF AMERICA,
NEW YORK CITY

MR. LITTLE: Our first subject upon the program this afternoon will be a continuation of the medical side, and then bunched together safety organization, education, and the dividends from safety and from health. It is our pleasure to welcome to the conference this afternoon, Dr. Edward R. Hunter, representing the Red Cross, the National organization from Washington, who will talk to us for a little while on "Red Cross First Aid." I am sure it will be of interest to you to know something of the standardized first aid courses that the Red Cross has worked out and is using in different places in the country.

RED CROSS FIRST AID

By DR. EDWARD R. HUNTER, FIRST AID DIVISION, NATIONAL HEADQUARTERS,
AMERICAN RED CROSS, WASHINGTON, D. C.

Mr. Chairman, Ladies and Gentlemen: A few years ago a surgeon connected with one of Chicago's large industries made the statement that anybody can read a paper but the real facts and the real information, the things that you come here for, are obtained from the discussion. Therefore, I hope you will freely discuss the subject of first aid in its relation to industries.

A great many surgeons have expressed themselves that every employee in industrial concerns should be given at least the elementary instruction in first aid and the more intelligent and adaptable employees should be selected and trained in detail. It is true there has been considerable criticism regarding first aid instruction. In most cases the criticism is not altogether explicit. A medical director of one of our prominent industries recently published an article on "the problems of the industrial surgeon," and stated that when they started their work they were most enthusiastic about instructing large first aid classes and accordingly many first aid centers were established with a layman in charge to render first aid service. It wasn't long, however, before their troubles were vastly multiplied by the excess of treatment on the part of the first aid men. There was fully as much work involved in treating iodine burns as in treating the original injuries. Also, the excess of bandaging and other treatment was altogether out of proportion to the demands. This experience does not prove, however, that first aid instruction to employees is undesirable. It does bring out the point that the medical department of the industrial concern in question attempted to teach their employees many specific things and in a few months they found they had practically taught their men nothing of value.

If they had taught their men that what one must learn, in order to practice first aid to ill and injured successfully, is not only what to do but what not to do, no doubt their experience would have been different. No attempt,

so far as I can ascertain, was made by the instructors to inculcate the fear of infection or blood poisoning. The term "blood poisoning" is respected by workmen more than the word "infection."

A first aid corps and equipment for administering first aid were supplied to each department, but they were not taught that their duties consisted only of preliminary care until the services of a physician could be secured. That the workmen were not taught the necessity for reporting all injuries, scratches and bruises is shown by the number of cases that did *not* report to the dispensary until serious complications made it necessary. Compare this experience with a large furniture industry that decided to give more careful attention to first aid work. Each department in this furniture plant made up classes in first aid. The company surgeon gave the instruction, with special reference to accidents in the furniture industry. The surgeon demonstrated his work and used a standard first aid kit. The men were taught what not to do and it was carefully impressed upon them that anything more than a simple first aid dressing was not to be done at the plant or by the first aid men. All injuries had to be reported to the company surgeon. Cases that bore any indication of being serious were treated by the first aid men only sufficiently to permit removal of the injured man to the surgeon's office. The men were carefully taught how to improvise a stretcher which secured the comfort and safe transportation of the person disabled.

The result of this training, and of the interest of the first aid men in the plant, was a prompt reduction in the number of accidents. A simple follow-up system was adopted by the first aid men that kept alive their attention to accidents in their departments. A report was not considered complete unless a report slip, printed in red, bearing the words: "This accident has been investigated as to cause and as to the possibility of avoiding similar accidents in the future by the captain of the undersigned first aid team." This insured against the most common cause of lack of attention to accident prevention by the foremen and superintendents of the departments. It is often the case that a foreman of a department, the superintendent, or timekeeper makes out a report and it does not receive the attention of those who are directed to make provision against a recurrence of a similar accident. When a superintendent makes out a report they are under a strong temptation to pass the matter along quietly lest they be held responsible for the accident by reason of some neglect to use guards or to enforce discipline and safety precautions. If the accident reports are passed through the timekeeper it is more than probable that he has no such authority as would enable him to take any steps to remedy the condition responsible for the accident.

The Bell Telephone Company of Pennsylvania early recognized that first aid is a vital essential to a healthy safety campaign, and in 1912 they decided to instruct their men in first aid. Through the American Red Cross they obtained a staff physician of the First Aid Division, who went through their territory, holding meetings and giving demonstrations to groups of their employees throughout the various districts. In this manner the men were made acquainted with the principles underlying correct first aid methods.

Then men of the foreman type, or men in supervising capacities, were selected from each district for intensive instruction in first aid work by representatives of the American Red Cross or by company surgeons. The lectures and demonstrations consisted of instructions in what is necessary in

order to perform first aid successfully, how far first aid should go, the relation of first aid to the prevention of accidents, the elementary outlines of the structure and mechanism of the human body, the respiratory, digestive and nervous and circulatory system, and then the course proceeded to the treatment for cuts, burns, bruises, sprains, fractures and dislocations, hemorrhage, shock, unconsciousness, sunstroke, heat exhaustion, resuscitation from electric shock or from the effects of gas. Time was taken at the end of each lecture by the men in practicing the instructions given them for the various injuries, placing bandages, splints, giving artificial respiration and the methods of transporting the injured. The instructions were prepared with particular reference to injuries in the telephone business.

First aid teams in each district were organized and first aid contests arranged to encourage proficiency. These contests have become an annual event; prizes are offered and the proficiency of the teams which enter the contest is amazing.

In addition to this training and the annual first aid contests, the Bell Telephone Company motor trucks and repair wagons carry a standard first aid box, the contents of which are periodically checked and replenished. Men who work alone or in pairs, such as installers, troublemen and cable men, are provided with pocket-size kits. Large size boxes are also available at all central offices and storerooms.

There may be a question in your mind: "Why pay so much attention to first aid?" Would it not be better to devote the time given to first aid to the prevention of accidents? An official of the Bell Telephone Company states that it has been their experience that the men who have taken interest enough in the work to become proficient in administering first aid, unconsciously become their safest workmen and their greatest advocates of accident prevention. The dissemination of first aid training and information has produced a far-reaching and beneficial influence in the prevention of accidents. This statement has been confirmed particularly by railroads, mining companies, and great industrial concerns, whose employees are especially liable to accidents. One of the officers of the National Safety Council states it has been their experience that the introduction of first aid in industry by the American Red Cross facilitates accident prevention work.

Regarding the details of first aid training as prescribed by the Red Cross for industries, it has been found that the only practical way is to have the instruction given on company time, with the expenses borne by the company. The value of the course to the employees is further increased if Red Cross requirements are so complied with that the men can get Red Cross certificates. The Red Cross course is based on the standard army practices in first aid, and has always been under the direction of an officer in the Army Medical Corps who is detailed to the Red Cross by the Surgeon General of the Army. The course consists of a total of fifteen hours' instruction. In some industries the course is given to all employees, while in others one or more men from each department are assigned for instruction. This insures having a trained man on the spot when an accident occurs.

It is desirable that a class be small rather than large, as individual instruction in practical work should be given each student. The company physician is the logical instructor, though any other physician may be chosen. In either case application should be made to the Red Cross to have the physician

appointed. Upon receipt of this request, directions for carrying on the course are issued with the card of appointment to the instructor. Upon completion of the course an examination is given, preferably by a physician other than the instructor, though this is not necessary. The Red Cross has suitable textbooks on first aid and can supply charts and instruction outfits. Our first aid supplies are modern, practical, clean, and the prices are extremely reasonable.

It is essential that, after a course in first aid is finished, the men should keep up practice in the work. This can be accomplished by an advanced course in first aid, limiting class instruction to actual practical demonstrations. This course entitles the men to a special Red Cross medal. Interest may also be stimulated by competitions in first aid contests between teams from different departments, or with other organizations. Rules for these contests have been worked out by the Red Cross and certain prizes for skill in this work are awarded to the winning teams. Whenever these prizes are awarded by the Red Cross, it is necessary that the Red Cross be represented among the judges.

This briefly, is how the Red Cross through its First Aid Division is trying to do its part in the movement for safety. We are always ready to cooperate in every legitimate way with all employers of labor, the employees themselves and the public generally, for the prevention of accidents, needless suffering and for the conservation of human life.

MR. LITTLE: Dr. DeWitt Broughton of Syracuse will recount to us his experience in dealing with a first aid organization in a factory.

THE EXPERIENCE OF A PRACTICAL FIRST AID ORGANIZATION IN A FACTORY

BY DR. DEWITT BROUGHTON, CHIEF, FIRST AID, BROWN-LIPE-CHAPIN COMPANY,
SYRACUSE, NEW YORK.

It was but nine or ten years ago that American industry began to recognize the importance of furnishing medical attention and supervision to their employees. This apparent indifference to the matter was not because of a lack of desire to promote the welfare of their men, but was because the value of having physicians in attendance at their factories had never been brought forcibly to their attention.

True, a number of the largest corporations in the United States were employing physicians prior to 1910, and many of this number had well equipped hospitals with efficient nurses. But it has been since 1910 that industry as a whole has favorably considered, or in fact, considered at all, the employment of industrial physicians.

As with many other great movements and reforms, legislation has been the necessary stimulus to assure the success of industrial medicine. This legislation took the form of the various workmen's compensation laws enacted in numerous states during the past decade. With the passage of these laws, employers began to consider industrial medicine more seriously, with the result that few factories are today without some kind of a first aid room with one or more first aid attendants.

With their attention directed toward the problem of caring for injured workmen, the employers began investigating the methods of plants with well-appointed medical departments. Their conclusions may perhaps best be shown

by the fact that in 1916, the members of the American Association of Industrial Physicians and Surgeons numbered one hundred twenty-five. Today the membership totals six hundred, a convincing testimonial of the rate at which the heads of industry have grasped the importance of giving their injured employees medical attention immediately after the accidents have occurred.

Another stimulus to the growth of industrial medicine has been the National Safety Council. This organization in the few years of its existence has achieved remarkable results in reducing the number of industrial accidents and disabled workmen. I recently talked with a safety first man of one of the largest corporations in the country, who told me that fifteen years ago, this one company experienced about 300 fatalities a year in its numerous plants. Nearly one life a day had been needlessly sacrificed. The records of this company for 1918 show that this number of fatal accidents had been reduced to 26, approximately two per month, in spite of the fact that the corporation has grown tremendously during the past ten years. This astonishing reduction of preventable accidents is due, he stated, to the propaganda of the National Safety Council and the efficiency of the company's own safety first organization.

A third stimulus was the great war which taxed American industry as never before to meet the demands of the allies. Our government through the Secretary of Labor, issued the warning that America must conserve her man power in her industries if she were to fulfill her promise to win the war. Capital and labor co-operated to effect this. The government set the example by engaging full-time physicians for its munition plants and ship yards and many private concerns did likewise. This greatly popularized the physician in industry and introduced him to hundreds of thousands of workmen who would not have received his services had it not been for the war.

At the present time there are eight million workmen in the United States receiving some kind of medical attention and health supervision provided by their employer. Notwithstanding this, and the fact that it has been approved and adopted by the large corporations and our own government, there are still thirty million working people, many of whom are working under frightful conditions, who are still neglected by their employers. How long this will continue, it is impossible to predict. Perhaps more drastic legislation will be necessary to correct it.

Most plants employing less than three thousand men have a first aid room with either a nurse or one or more first aid attendants in charge of medical work. Their work consists of emergency treatment preparatory to sending patients to the hospital or to an outside physician, of applying bandages, and of deciding whether certain cases should continue to be treated in the plant or whether outside medical aid should be secured. This is a vast improvement over the ancient practice of applying a quid of tobacco to a lacerated finger, and binding a dirty handkerchief around it. It is far superior to allowing foremen or fellow workmen to excavate with the ever ready sharpened match or toothpick for pieces of steel and emery embedded in the eye. It has its advantages over removing slivers and chips of steel from the hand with germ laden tweezers and pocket knives. But even this system of first aid has its disadvantages and limitations. There are many injuries such as a strained groin or a suspected hernia which a nurse cannot examine, and there are other kinds of injuries which the men would refuse to report to a nurse. Her

training and experience with physicians previous to her industrial work makes her a very capable assistant, but, on account of circumstances, she cannot be expected to assume complete charge of work of this nature.

The first aid attendant or first aid "man," as he is known in the factory, is, in most cases, selected from the shop and given a first aid course, usually that outlined by the American Red Cross, or similar to it. Consequently his judgment is not respected highly by the men in the plant, for he is considered but one of their own number who is being paid to apply iodine and bandages to injured members. They consider him no better qualified to care for injured employees than they themselves, and it is with difficulty that they can be persuaded to patronize the first aid room. And in most cases they are essentially correct. The first aid attendant at best, knows but very little of bacteriology and pathology, the very fundamentals of both medicine and surgery. He may make an excellent assistant, but his limited training hardly qualifies him to exercise surgical judgment. So, he may accept as trivial, some condition which may prove serious if neglected, and is too often inclined to become hysterical when some unusual emergency arises.

May I ask your indulgence if, in trying to outline our system, I make too many personal references? The title of my paper makes this necessary.

Our organization at the Brown-Lipe-Chapin Company, a gear factory, employing slightly under three thousand workmen, consists of a physician, a registered nurse and two first aid attendants. Our duties consist chiefly of examining applicants and treating injuries and minor complaints such as constipation, headache, etc.

When an applicant is interviewed in the employment office, he is asked if he has a hernia or any other condition which might cause him to be rejected by the doctor. If he denies the presence of these defects, his employment card is filled in and he is sent to the examining room. Here he is instructed to go to the lavatory and urinate in a wide mouth bottle. Next he is asked to enter one of the examining booths and remove his coat and shirts. There his vision and hearing are tested, his heart and lungs examined and any deformities or abnormalities noted are recorded. He is then asked to allow his trousers to fall to his ankles, whereupon he is examined for hernia, venereal disease, varicocele and varicose veins and ulcers. While the applicants are dressing, the physician makes a urinalysis, testing for albumen and sugar. The examination being completed, the physician records the result upon the reverse side of the employment card and marks the card either "accepted" or "questionable." By this is meant that an applicant is a poor risk for the company, and that the physician does not advise that he be hired. The employment office, however, may use its own discretion in the matter. If no significant defects have been detected, the applicant returns immediately to the employment office where he receives his time card and directions for locating his foreman when he begins to work.

If, however, he should exhibit some physical abnormality which would make it hazardous for him to do the work to which he was assigned at the employment office, the manager of labor relations is consulted, and the applicant is given different work for which he is physically adapted.

For example, if an applicant has albumen, a symptom of kidney disease, he is not permitted to work in the case hardening department where he is subjected to sudden changes of temperature, but is assigned perhaps to an inspec-

tor's job. If he has a distinct heart lesion he is not permitted to do piece work, but is given some kind of work with an hourly rate. We do not allow men with varicose veins to move stock or perform work that requires them to be on their feet all day, although they are accepted for bench work. Poor vision or loss of an eye prevents men from operating machines or from doing other work where the eye is exposed to injury.

To illustrate how far this selective system may be practiced, I might say that not one disabled soldier has been rejected in our plant. I now recall one young lad with a dead chum's bone grafted in his leg, being accepted as a benchman. Another, who received 50 per cent disability as a result of an eye injury, is employed as an inspector. A Canadian soldier who was severely "shell shocked" and who still shows signs of "jumpiness" at times, is a clerk in the pattern shop, the one quiet spot in the whole factory.

The defects are kept on file, and those who exhibited remedial conditions when hired, are advised and told to report for a re-examination at a later date. Applicants with cataracts, herniae, diabetes, tuberculosis, venereal disease, contagious diseases and decompensated hearts are rejected.

Of the 3,980 applicants I have examined, 115 or 3.46 per cent have been rejected. Of this number, ruptures have caused the largest number of rejections. One thousand four hundred and seventy-six have exhibited some deformity or abnormality of importance enough to record.

Objections to these physical examinations have been raised by many employers, lest the applicants brand the plants as approaching military organizations and thereby boycotting them. But of the several thousand applicants I recall but three, possibly four who were unwilling to submit to the examination. Upon several occasions I have asked applicants just before beginning the examination their attitude toward it. The mentality has much to do with the answers received. Most were passive toward them, and replied by merely, "Oh, I don't care." A few grumbled a little claiming that it was nonsense, but none objected seriously. Others apprehended that the benefit received is mutual to the employed as well as to the employer. They are grateful for the satisfaction of knowing that they are physically sound. They are also grateful if they have some abnormality, for knowing that they are being put on work that is not rendered hazardous by their physical condition. They are grateful to know that they are about to work for a company that is attempting to protect its men from contracting contagious diseases. Even a number of those rejected have said that they were glad to learn that they had a condition which they did not know existed and have asked advice for having it corrected if possible. In my experience, I must say that the fears that the physical examination of applicants would tend toward aggravating labor unrest, are entirely unfounded.

For those employers who have hesitated to engage physicians to conduct examinations on account of the immediate cost, I wish to quote the statistics of Dr. Harry E. Mock, printed in the September number of the *Journal of Industrial Hygiene*. He has compiled the following data from ten plants employing a total of 102,400 men:

Number of applicants examined in one year.....	118,900
Saving to these 10 plants by rejections.....	\$400,155
Cost of entire medical work.....	256,000
Profit from this one branch of medical work alone.....	144,155

That is an average of over \$14,000 saved each year by each of the ten plants,—a very profitable investment.

When the applicant returns from the examining room to the employment office, he is given with his time card, a small pamphlet containing the rules of the Benefit Association and instructions and warnings which he is to observe while he is working. He is warned not to grind tools without wearing goggles provided by the company. He is warned that "fooling" or "horse-play" will not be tolerated. He is instructed to report all injuries, no matter how trifling they may appear, to the first aid organization and to continue returning for dressings until he is discharged as recovered by the physician. In addition to this, the foremen are reminded at times, that it is their duty to send the men to the first aid room whenever they receive injuries.

Since employing these methods, the weekly number of new injuries and redressings that are taken care of by us has increased from 619 to 922. It might appear from this statement that the number of accidents has greatly increased. What these figures really indicate is, however, that injured employees are reporting more regularly for redressings, and that small injuries are not neglected as formerly. For the past twelve months there have been 6,820 days lost as a result of 1,438 lost time accidents, as compared with 7,148 days lost resulting from 964 lost time accidents occurring during the year previous. These statistics do not include deaths.

The fact that we have treated approximately 19,000 injuries during the past year which resulted in no lost time testifies to the conscientiousness with which treatment is sought for trifling injuries which the men realize might prove serious if neglected.

The treatment rendered injured employees in our plant does not differ essentially from that employed by the Red Cross first aid, so I shall but refer briefly to it. Seriously injured employees are given such emergency treatment and dressings as are required until they are transferred to the hospital. When a man leaves the plant as the result of an accident, our department's responsibility to him ceases. While an injured employee continues working he is treated in the plant, unless there is a probability of a partial permanent disability, in which event he is attended by a physician appointed by the company which carries the factory's compensation insurance.

If an injury prevents a man from performing his regular duties, his foreman is asked to provide an easy job until the injury is healed. If this foreman already has too many temporarily crippled men to make this possible, the manager of labor relations is again consulted and the man is transferred to another department until he has fully recovered.

When an employee reports for treatment, a duplicate report of the injury is made. This gives the man's name, address and clock number, a description of the injury and of the accident, and the probable length of disability. The original is filed and the subsequent calls recorded on the back. The carbon copy is sent to the foreman who is thus informed not only of the accident but the probable length of time one of his machines will be idle. Thus he can make preparations to keep up his production by filling the vacancy until the injured workman returns to work.

If the injury was serious or preventable, our safety first man is notified and makes an investigation to determine how a similar accident can be avoided.

When an employee who has been off duty on account of an accident is able

to return to work, he must first present himself at the first aid room for a re-examination of the injury. If the injury is sufficiently improved to permit his returning to work, a blank addressed to his foreman is issued to him. This states that the man is able to either resume his former duties or light work. Upon receipt of this slip, the foreman is permitted to give the man his time card.

Upon the man's accident report which was made at the time of the injury, is then recorded the date he returned to work. It is then placed in the "Resumed " file.

Our department is in charge of the health supervision of the employees, and in this co-operates with the safety engineer. Men often present themselves for examination to learn why they are losing weight or sleep, or possibly why their production has decreased. An honest effort is made to find the cause, and they are advised accordingly. Many times it is revealed that the patient does not get the proper food or perhaps does not take sufficient time for his meals. Other cases have too many outside activities. I have found a few of the night shift who were working days also, for some other employer. Many are advised to consult an oculist; others to have their tonsils removed. Many come to the office complaining of painful feet. This invariably means flat feet, the result of standing every day before machines. Those who heed the advise to get arch supporters are very grateful friends.

It is often necessary to share the men's intimate troubles which are often more serious and incapacitating than physical complaints. Whatever assistance or advice can be suggested to alleviate this kind of suffering, is cheerfully given. In the plant physician the workman expects to find some one in whom he can confide those mental worries which he would not think of sharing with foreman or fellow workmen. He knows that catharsis of the mind is as beneficial in these conditions as is catharsis of the intestines in others.

To summarize, an organization like that at the Brown-Lipe-Chapin Company:

- (1) Assigns applicants to work for which they are physically best adapted.
- (2) Prevents employing a small percentage of applicants who are costly additions to a company.
- (3) Is thus a profitable investment to the employer.
- (4) Minimizes, by being easily accessible to the injured, the time lost by employees enroute for treatment.
- (5) Reduces the number of infected wounds by keeping them clean and sterile.
- (6) By its accident reports, informs the foreman how long he may expect to be without the services of an injured man.
- (7) Has records of all injuries received in the plant and the time lost.
- (8) By being in proximity to the men and by its records, reduces malingering.
- (9) Reduces labor turnover by selecting men who are physically able to perform the work to which they are assigned.
- (10) Provides better hygienic surroundings for the workmen.
- (11) Reduces time lost by accidents by providing light work for the injured which cannot be accomplished by outside physicians.
- (12) Does not, by conducting physical examinations, promote labor unrest.

MR. LITTLE: We have about ten minutes of the hour left. Are there any remarks from the floor, or questions to propound to either of these surgeons?

Personally, I was very glad indeed for the last paper indicated the positive values of this work and only incidentally touched on physical examinations and rejections. Of course, it is most unfortunate when rejections come to hold a very large place in workmen's minds, and it is because there may be rejections and discriminations, naturally, that workmen are opposed to it, theoretically, whether they all are practically or not. But it seemed to me that the paper indicated that, in this particular company at least, the values are positive. It is the welfare of the workman as well as the company that they have in mind, and that while there are some rejections, they were not numerous. It was very clearly done, and I don't suppose there is very much to say.

I am going to ask Commissioner Lynch to make some announcements relative to tonight and tomorrow.

REMARKS

COMMISSIONER JAMES M. LYNCH: To-morrow is "Inspector's Day" at the Congress, and we are anxious that all of the attendants at the sessions of the Congress remain until to-morrow and listen to the inspectors who cause all the trouble in the factories throughout the State. You have all of the other days in the year to talk to the inspectors and tell them what you think of them, now tomorrow is their opportunity to do a little talking and to tell you how much they think of you.

Our inspectors will talk in the affirmative sense and tell you a number of things that I think you will be interested in. We are anxious, I, as the Commissioner in charge of the inspectors who are doing the field work, am anxious to have you with us to-morrow so that they may tell you some things and you may tell from the floor what you think of them. That, they are particularly anxious for.

They are anxious seriously, for constructive criticism and if you will be here to-morrow and furnish that constructive criticism, and if you will point out their faults to them, they will truly appreciate it. They want you to tell them where you think they can improve their methods, where you think some suggestion may be helpful in this worth-while work that the Bureau of Inspection is doing in the factories of this State. Be with us to-morrow at the forenoon session, and join with us in the discussion of what we are trying to do with the great problem that the Congress is discussing to-day, and all through the sessions—the prevention of industrial accidents and prevention of loss of life in factories and mercantile establishments. We will appreciate it if you will show us that courtesy and consideration to be with us to-morrow.

Now there has been some newspaper comment on the suggestion that this Congress should be held somewhere else. It has been intimated that representatives from other cities are agitating for a removal of the Congress from Syracuse to either Buffalo or Rochester or New York, or some other city in the State. That is very helpful, you know that shows the Congress is a success when they are after it. It shows that we are on the map with a bang. It has been a hard pull for three years since we started to make it a real success, but we have come across this year with a sound that will be heard all

through the State. It shows the other cities appreciate that when we can get the magnificent audience to-day and the very fine and intelligent audience that we have to-day.

The Industrial Commission selects the city where the Congress will be held. That, of course, is all tied up in the Commission and rightfully so, because that gives me one-fifth of a chance to vote for Syracuse — I may not have the same proportion here.

Let me say this to the cities who desire the Congress next year, you are going to have fair consideration, if there is a good reason to take it to some other city and in order that all cities may have that consideration I will now say that I will ask the Commission to consider the location of the city for the next Industrial Safety Congress — the fifth — on the first Tuesday in February. That will give all the cities an opportunity to get in their bids for the Fifth Industrial Safety Congress to be considered by the Industrial Commission on the first Tuesday in Syracuse. They can all work just as hard as they please, I will be perfectly satisfied if you make it very, very hard for me to have Syracuse selected.

The other thing is the matter of registering at the Hotel Onondaga just at the entrance to the safety exhibits. A large number of the attendants have registered, larger than we have ever had before, but from the audiences we have had here there must be a large number of the attendants that haven't registered. If you desire a copy of the proceedings of the Congress, unless you do register, we don't know you are here and it will be impossible to send the printed proceedings of the Congress to you. So, do that this afternoon, if you haven't already done so.

If you haven't thus far had an opportunity to inspect the magnificent safety exhibit that we have at the Hotel Onondaga, do that before you leave the city. Both of your Deputy Code Commissioners worked hard to get this safety exhibit together, and the result of their work is shown in the exhibits. All the people who are here, all the experts who have inspected the exhibit say it is the best exhibit we have had thus far, and I am sure the broadening of your minds in attending the conference will not be complete unless you inspect the safety show at the Hotel Onondaga.

MR. LITTLE: On account of the delayed train it was necessary to make a change in the middle of the program of the morning, and now we will revert to the subject of the safety man's day, and the safety man's part; and the safety man's part in organization and education. A great many safety men in the country, and a great many safety men in the national safety movement have varying abilities and boundless enthusiasm, each doing his bit to promote a great cause. But I think we will all quite unanimously agree that there is only one Charley Price, and he embodies the altruism, the enthusiasm, the broad sympathy, the practical knowledge to help put this across as no other man in this country has. He is the general manager of the National Safety Council, and I take great pleasure in introducing Mr. Price who will now speak to us on "Safety Organization and Education."

He announced at the luncheon table that he was going to sing the old, old story of safety. A good many may have heard him but I know you will be glad to listen again, and Mr. Price is to speak to us for a half hour or more, as he desires.

SAFETY ORGANIZATION AND EDUCATION

By C. W. PRICE, GENERAL MANAGER, NATIONAL SAFETY COUNCIL, CHICAGO, ILLINOIS

Mr. Chairman, Ladies and Gentlemen: Some time ago a professor in one of the Universities of New York City went to my dear friend, A. H. Young (who will speak on this program about four o'clock and who now is at the head of the Industrial Relations Department of the International Harvester Company), and he said, "Young, I have heard a good deal about this safety first movement. I don't know anything about it but tell me what is the one most significant fact that has developed out of this first twelve years' experience?"

Young said, "Professor, I never thought of it just that way. I don't know that I could give you an answer right off the bat, but if you will give me a couple of hours I'll see what I can do."

In a couple of hours he said, "In my estimation the one outstanding fact in this first twelve years' experience in this great movement is this: We have absolutely demonstrated as a fact, not a theory—you can prove it to anybody in ten minutes—we have absolutely demonstrated that we can eliminate three-fourths of all deaths and serious injuries in industry."

I said to myself that is a mighty good answer if that is true—and it is true, ladies and gentlemen, it is true.

If that is true, what does that mean? Out of the twenty-two thousand human being in industries that were killed last year, sixteen thousand five hundred of those deaths need never have occurred, and we know how to prevent it? That means out of five hundred thousand American workmen and workwomen injured by accident last year in the United States, that three hundred and seventy-five thousand of those serious injuries need never have happened, with all the saving in pain and suffering and deprivation to the family that followed in the wake of those accidents!

I said to myself, if that is the most significant thing—and I believe he gave the true answer—it occurred to me to line up two or three others of the outstanding things that we have learned in this great movement the last twelve years. And, I should say the second is, as Mr. Mather of Mather Company, Cleveland, said the other day: "Gentlemen, in my estimation the accident prevention movement during the last twelve years has offered the first common ground on which the employer and employee can absolutely meet with mutual understanding of each other's motives, and with profit to both." I absolutely believe that that ought to be mentioned second on the list.

I should say the third is this (This is an old story, you have heard me say this before): Take every company that has reduced accidents from fifty to seventy-five per cent—and there are hundreds of such companies, many of them in New York State—every one of them will tell you that not more than one-third of all that they have accomplished, or could have accomplished, was accomplished by any mechanical guard or mechanical equipment. Two-thirds was accomplished by reaching the foremen, by absolutely convincing them; and through the foremen reaching the workmen. I say two-

thirds — let me stop now and say in the State of New York, where manufacturers have inquired into the requirements of Mr. Lynch's department and the requirements of the insurance companies, ninety to ninety-five per cent in many cases of the accidents last year could not have been prevented by mechanical measures. So, don't you see, this is rapidly becoming an educational movement? One thing employers are asking — what can I do, how can I organize the safety work in my plant so as to really reach the workmen and get them intelligently interested in protecting themselves?

Now, in answering that question, I am going to mention five standard features of a safety organization in the plant. But first let me mention what I consider the two indispensable things that must be done in a plant before you can even start, and this will be old, too, but it ought to be repeated at every safety meeting.

First: The general manager, the general superintendent, whatever you may call him, the big boss at the top, must absolutely believe in safety; must put it on the map; must get back of it and stay back of it so unmistakably that not a foreman or a workman in the plant will doubt for a minute what he, the manager, proposed to do to make that plant safe and keep them from being injured. I say that is absolutely indispensable.

In my work in Wisconsin (five years of safety work, two and a half years with the Safety Council), it happened to be my job to visit a great many plants in which they were not getting results. You know, in every single case, without an exception, I found that the manager behind the mahogany desk didn't believe in it. It was still in the baby class, good for mother on Sunday and he had never put it on the map.

The second indispensable thing before you can even start is this: I believe that every man who is in close touch with accident prevention work will agree with me that more and more we are coming to see that it comes to this, that the attitude of the workmen towards safety, depends absolutely on the attitude of the foreman. If he is cold, the workmen are cold. They think the company don't give a damn, there are more men at the gate. I often say to foremen, I say it every time I speak at a foremen's meeting, that what the workmen think of the company, that is what they think of you; what they think of safety work is what they think of your attitude toward safety and they can't get by it.

I have never seen a plant where the foremen were cold on this proposition that the workmen weren't cold on it, too. You have got to get the workmen and the foremen absolutely convinced that safety has arrived, has been taken out of the baby class, and who, by the earnest, honest way they talk to the men convince them they are being safeguarded and everything in their power is being done to keep them from getting hurt.

I say those two things are absolutely essential before you can even consider or start on what we call a safety organization.

I am not going to name these five features of the safety organization in order of their importance. I am going to name them in the order I have put on this paper, I am going to leave the most interesting and most important feature until the last.

I suppose if we are organizing a plant we would be asked, "What is the value of a central safety committee?" I remember we organized in one com-

pany, located in Chicago, a central safety committee of five very high-grade men. I worked with that committee for five years and it proved invaluable to me as a safety inspector in working out standards, in passing on disputed points, in determining plans of educational campaigns; in other words, that committee really took the place of a general manager, and I don't recall a single recommendation made by that committee of five high-grade men that was turned down. I remember one of them cost fifty thousand dollars.

I don't think it is indispensable, but it is a very important thing to have a central committee made up of high-grade men; the inspector, the superintendent, mechanical engineers, men in whom the management has confidence, who will take the time to consider the most important items on the inspection reports and pass judgment on them, and pass it up to the management. I believe it is a very valuable feature of an efficient safety organization.

Second: It has been found practical in plants of, say five hundred men or more, to appoint a committee of five foremen collected from different departments and have that committee make an inspection of the entire plant once in three months. Being an independent inspection, it helps to standardize the safety work; it helps to stimulate the foremen of the plant; it does a great deal for the foremen who make the inspection and it serves as a valuable means of bringing the ideas of all of the foremen together. I think it is well to change the personnel of that committee, possibly in some plants they only make one inspection and then change to another five men. I think it is a good plan.

The third feature I want to speak of is meetings for the workmen. I happened to visit the National Tool Company, McKeesport, some time ago, and Mr. Cornelius—son of the general manager—told me of a very interesting experiment he had tried. He had adopted the plan of each month selecting one department and going down into that department at twenty minutes of twelve, stand up on a box and speak to the workmen as the general manager. This is about what he would say:

Now, men in this department, there have been some men injured. You have lost so much time, and so much wages have been lost and it cost the company so much money. Now, I want to say to you boys that a little loss of two thousand dollars on the part of the company doesn't touch us; our children won't have one dress less, it will mean no deprivation to them. But, it will mean everything to you men. If you will just stop to think of it, you are a thousand times more interested than we officers of the company are. I want to say, and I represent the company as a general manager, this company is prepared to go the limit to make this plant safe and keep you men from being injured, if you will come with us.

They have found that is one of the most valuable things they have done to have the general manager go before the men and put the company on record to convince the men that the company is doing, and is willing to do, everything in its power to protect them.

Now, safety in most plants needs exactly that kind of a punch to convince the workmen and get them to take it seriously. Then we should not forget to mention the bulletin board which has come to be recognized by everybody as one of the standard methods of instructing the workmen and keeping safety first uppermost in their minds; driving home with pictures and stories from week to week, what the workman himself can do. We don't want to be content in our bulletin boards with using those printed by the National Safety Council. Some of the best bulletins are gotten up by the plants themselves,

going out and taking photographs of injured men and driving home the lesson that should be derived from that injury.

I remember one of the most interesting bulletin boards I have seen was a bulletin board about three feet square covered with glass. In that box were forty-two pairs of goggles with one of the lenses crushed or cracked which had been struck by a piece of steel. Underneath were two rows of heads of rivets and chips of steel that had struck those goggles, and across this was this sentence: "Forty-two eyes saved in ten months." I want to tell you that kind of an exhibit will get underneath and they will take eye protection seriously.

I remember at Swift and Company they had a man working with a mushroom head chisel; one-quarter of the chisel flew off and cut his eye out. There was a picture of the one-eyed man above and a story of the accident and how that eye might have been saved if he had worn goggles. There was also in the picture another chisel of the same size but with a properly ground head. And I say, too, that brings home to the workman the seriousness of exposing this delicate and wonderful organ to flying chips.

Coming to the fifth item, here is where I want to dwell particularly. One of the most interesting features of the safety movement has been the democratic plan of appointing workmen's committees, workmen's inspection committees. Giving them time and authority to go out into their department, or into the plant, to make a perfectly unhampered and fearless, independent inspection; encouraged to find just as many dangers as possible and then to report them in writing to the foreman. I believe that that is, when it is properly organized, one of the most effective methods we have yet discovered of really breaking through the crust of indifference among our workmen and getting them to take safety seriously.

Now, some of you men who are not familiar with committee work say they make a lot of foolish suggestions. I have found that in practically all plants where those committees were properly appointed and properly instructed and encouraged, that ninety to ninety-five per cent of all of their suggestions were good ones, and accepted by the company.

I remember Ralph C. Richards told me that out of six thousand suggestions made by the eight hundred men on the Northwestern Railroad during the first three years of their safety work, all but two hundred and eighty-five of those suggestions were good ones and accepted by the company.

Now, there are several things that are important to know in organizing workmen's committees, and I want to run down about a dozen of those items. First, the success of the workmen's committees depends absolutely on whether the foreman believes in the workmen's committee idea; whether he really has become convinced that the workmen can help him make that department safe. The way to get workmen interested in the thing is to give them some inspection, some active part, some responsibility. A great many have tried workmen's committees that have been failures; I imagine half of them I have seen are failures. A good many organize workmen's committees to get by the insurance company. I say they must absolutely be backed by the foreman, or it is a failure.

Now, in appointing workmen's committees I think it is well at first to appoint on that committee all the older, and more intelligent, and more

respected men. I find that in many plants they have adopted the plan of appointing three workmen in the department. Some plants having three to five hundred, will appoint a committee of five for the entire plant, especially where the department is hazardous. Where a committee of three is appointed, I think it is very essential that the foreman should appoint that committee; that committee should report to the foreman and the foreman should be made responsible for the committee. It is exceedingly important that the foreman should talk to the committee and tell them they really mean, now that they are going to be given absolute liberty, to go out into that department and make a perfectly independent inspection. Encourage them to believe that the more dangerous points and more dangerous practices they find, the better the company will like it.

A third thing I have found very important, those workmen should make those reports in writing so there will be no misunderstanding and that report should be submitted to the foreman. The foreman will probably take care of two-thirds of the items recommended. Possibly three or four items are beyond his authority; usually that report is sent on to the superintendent or the central committee and they note the items that the workmen have recommended and the foreman has taken care of, and note the ones to be taken care of by the superintendent or the mechanical department.

Whenever a recommendation is made by one of those committees which doesn't seem quite practical, or can not be carried out at that particular time, it is highly essential that the foreman carefully explain to them why that recommendation can not be carried out, so there will be no feeling on the part of the committee that their recommendations are not receiving careful attention and are not properly respected. Sometimes they will make impractical suggestions, perhaps foolish. The foreman should never treat it as a foolish suggestion, he should give every suggestion careful and very respectful consideration and thereby keep the confidence of the men and encourage them in their inspection work.

I remember one company, I think the Commonwealth Steel Company, where the general manager would appear personally to each member of the workmen's committee, and they had a number in that plant, expressing his appreciation of the suggestions they had made on a particular inspection tour, and indicating to them the disposal that had been made of those suggestions. Just that little word of encouragement and appreciation on the part of the manager put new life into the workmen's committees.

Now, why are workmen's committees successful, what is the psychology of it? It is the commonest kind, any ward politician knows it; the way to get a man interested in a lodge, church or anything is to give him some part to do, some recognition, some responsibility.

Another thing we find in this workmen's committee is this: When those men go out into their department and begin to look for ways for men to be injured and killed, they begin to see and believe what you can't make them believe by simply telling them, what a large per cent of the accidents can not be prevented and what a small per cent of the accidents can be prevented, by mechanical guards. I think that is one of the most momentous things we can get into the minds of our workmen, to get them to believe that and it sometimes changes their attitude for safety.

Another thing I meant to say awhile ago. Where they appoint these men to serve for three months, it is usually one man for three months, one for two months, and one for one month, so there are always two on the committee who have had experience. In that way during a short period you give a large number of men in the plant some experience. Then we find that when these men have had this experience they gain new interest which always follows this practical experience in inspection, and they become the best boosters for safety; they will do more than any one in the plant to break through this crust of indifference and to really get the workmen to take safety seriously.

I remember Mr. Shattuck, the Treasurer of the Kimberley-Clark Company, standing before an audience of paper mill owners in Milwaukee one day and, by the way that company has one of the best central committees in Wisconsin, they have the real spirit, the real encouragement of the company back of it. He said: "Gentlemen, if our workmen's committees hadn't brought about the reduction of a single accident in our plants, the change in the attitude of the workmen toward the company has more than repaid us for all of the effort and expense of our workmen's committees." I happen to know that there has been a change in that company both as to the attitude of the workers to the management and vice versa.

I know that to be absolutely true. I remember just before I left Wisconsin the paper mills up and down the valley were having strikes; they tried to down the Kimberley mills and failed. Why? They had developed a familiarity and pull-together spirit.

Speaking of workmen's committees—and now I am coming to a close, Mr. Chairman—I think of one story, I think some of you have heard me tell it. I remember one day I went up to the Neenah Paper Company, one of the plants of the Kimberley-Clark Company. I met Jackson, the manager, and he said, "I have the greatest scheme you ever heard of. I have just appointed five men as an inspection committee on safety. I want to tell you what happened. The first hour they came back with twenty-eight points of serious danger. On any one of those points a man might have been seriously injured or killed. I want to show you one of them." So, he took me down into the basement. I remember as we started down stairs we couldn't see, it was one of those old-fashioned paper mills built over a river. Pretty soon I began to make out things. I saw the floor was wet and slippery and slimy and over on the right-hand side I noticed a big beam, two feet from the three-inch shaft with a pulley running. You know, those fellows found the oiling had been done with the pulley running. Possibly the man had gone down, crawled on his belly over that shaft, under that beam and in and around behind it and oiled the machinery. If he had been the superintendent he would have been killed.

DISCUSSION

MR. LITTLE: Mr. Stanion, Manager of Safety and Sanitation, Aluminum Castings Company of Buffalo, will lead the discussion.

We are just getting under way, gentlemen. We are going to have a whirlwind time here.

MR. THOMAS STANION: It is rather a hard job to ask any ordinary man to follow so able a speaker. But, inasmuch as the program committee have requested it, so be it.

To me the one who opens the discussion can always be likened to a fellow who is going to crack a very large and meaty nut and then when the pieces fall away, the others can dig out the meat.

Education and supervision of safety work tends largely to show the proper relation between the two important phases of accident prevention. That is, the mechanical guarding and the education of workmen. Sometime ago the manager of a large foundry asked one of his assistants, who was experienced in personnel matters, if it was true that seventy-five per cent of lost time accidents could be avoided through educational efforts and if only the other twenty-five per cent could be prevented through mechanical guarding. His assistant replied in the affirmative. "Oh, well," he said, "that is fine, we will just go after the seventy-five per cent first. That is the bigger part and we will get the twenty-five per cent later on."

Our speaker brought out clearly the proper sense of proportion between the mechanical guarding and the educational work. It must be handled together; they are important; one is no more important than the other just as one link in a chain is no more important than its fellows.

One of the aggressive ministers in New England, who spent some little time across the water in the World War, has recently made a statement based on his own experience. He has been a pastor of a large church, a wealthy church, where he had seen the people who were the owners of business, largely. He had been during the war at the other extreme of the social scale, if you choose to call it so, and had seen the very primitive conditions, and revolting conditions that sometimes exist; he had seen the middle class of people, through his war service, and he said, "Out of all these experiences I find that there are restless people, in no one class do we find them happy and contented, and yet it is hopeful to know that in all of these places they are coming to find a solution for these restless conditions and that in each place it lies through the people, of that particular class experiencing the joy of exercising control."

Now, there is no joy in exercising control over things we have no right to tackle. The way to that joy of exercising control is to attack problems that belong to you and carry them forward. The great factor in the educational work of safety is that it gives to the men in the shops that particular feeling, the joy of exercising control over things that pertain to them.

Now I know a lot of you have questions you want to ask, and things you want to say. Mr. Price's treatment of the subject can be likened to the mother-hubbard that the Southern mammy wore — likened by contrast. This mother-hubbard covered everything and touched nothing. Mr. Price covered everything and touched everything.

GENERAL DISCUSSION

MR. LITTLE: Are there any more discussions or questions? Mr. Price, Mr. Stanion and Mr. Young are here and would be glad for you to take part in this discussion.

MR. H. B. MEACHAM, Seneca Falls Manufacturing Company: We have had an experience in accident reduction in our plant and we have accomplished that end by means of our shop paper. The point I want to make is this, Mr. Chairman, that I don't believe we firms that publish shop papers take advantage of the opportunity to reduce accidents by means of education through its columns. A good many shop publications come to my desk every month, and if I remember correctly, about the only one that takes the matter up very much at length is the one published by the Cambria Steel Company. They seem to put the matter of prevention right up to the foreman on a competition basis. We tried that, we went perhaps a little too far with it in the beginning, but our experience has been that it is a most valuable means for accident prevention.

It is a phase of the subject that I don't believe has been gone into very much. A lot of we fellows are new in this field of shop publications and didn't have anybody to go to, to know how to run a shop paper. I suggested to Commissioner Lynch, just before the meeting began, that I believe it would be a mighty good idea if the men of New York State, who are interested in shop publications, could get together and have a clearing house of ideas, both with regard to safety and to welfare.

MR. G. G. KINGSLEY, Halcomb Steel Company, Syracuse: Mr. Meacham, I think, is handing a few bouquets. There are a number of shop papers coming to our desk from different parts of the country, but nearly all of them touch on safety, especially the steel company papers.

We have one thing we find very effective and appears regularly every month on the inside back cover—Who's Who In Safety. Under that is the name of every foreman who has gone through the month without a lost-time accident. Just at the end of the column we have comic remarks—Those Who Spilled The Beans, and things like that. We find that the men, the foremen, to whom the accidents are charged want to keep their name out of it, "Who Spilled The Beans."

MR. GERALD BELLHOUSE, Deputy Chief Inspector of Factories, England: I wanted to ask Mr. Price if he would say a few more words about why the shop committee should be appointed by the foreman rather than be selected by the superintendent?

MR. PRICE: The principal reason in my own mind for appointment of committees by the foreman, especially in the shop where you are starting out, is you should not go over the head of your foreman. Supposing that committee is appointed by the superintendent, or that you appoint that committee, and the committee goes into a department to make inspections. It sort of goes over the head of the foreman and at first, until they get used to this, it is irritating and they resent it. When the committee is appointed by the foreman in his own department and they report to him and no one else, I think you will avoid a good deal of trouble. I am not saying in some plants where there is an ideal relationship between the workmen and the foremen the other plan will not work, but I say practically every one I have known I would recommend for safety's sake that at first the foremen appoint the committee.

MR. LEW R. PALMER: I would like to add another word of tribute to that already voiced appropriately by Mr. Price. He mentioned Mr. Cornelius of

the National Tube Company. As perhaps a good many of you know, that company is a subsidiary of the U. S. Steel Corporation. It is the banner company as to safety record. I think that the splendid records made by the National Tube Company in accident prevention have stimulated more plants to improve their records than any one company I know of. I know it was splendid ammunition for me when I was in charge of safety work in a competitive plant in the Pittsburgh district, and I believe it has done as much as any one thing to assist me in bringing my lost time accidents from 2.7 to .35, in order to compete with the National Tube Company's record. I mention this for you safety men to shoot at, and I finished the year 1918 with a lost-time accident report of .23. Now that is one of the best records I know of. I think that you safety men would like to know of some of these good records in order to go home from this Congress and tighten up your belt and go at it again.

MR. LITTLE: I suppose there are some representatives of plants here where you have tried safety committees and given it up. Yesterday it came out, apparently, that some plants where safety is accepted and believed in don't have the committee system at all. Do any of you gentlemen wish to speak, or ask questions, or testify as to why you gave this up, if you did?

While you are getting on your feet, I know of about a half a dozen plants where they had these safety committees for quite a while and gave them up for these reasons. First, the man at the head of it wasn't versatile enough; wasn't enough on his toes, providing himself with suggestions to keep his safety committees going. It requires a good deal of fine leadership. That was the first reason. Then he hadn't studied his problem through far enough; hadn't been experienced in it long enough to see the accumulative gains from the committees' work.

We will turn now to consider—"Dividends From Safety and Health in Industry." We have our good friend Arthur Young, Manager, Industrial Relations, International Harvester Company, to speak.

DIVIDENDS FROM SAFETY AND HEALTH IN INDUSTRY

By ARTHUR H. YOUNG, MANAGER, INDUSTRIAL RELATIONS, INTERNATIONAL HARVESTER COMPANY, CHICAGO, ILLINOIS

Mr. Little, Ladies and Gentlemen: I feel there is just a little bit of a challenge in the title of a paper, or the request to prepare a paper on a dividend rate, or on the question, "Does safety or health prevention work pay?" In presenting my thoughts on the subject I am minded to profit by the advice of an old colored preacher who had had consistent success in delivering his sermons. Some one asked his system, he said, "It's perfectly simple, I divide every sermon into three parts. First part I tell 'em what I'm going to tell 'em; second part I tell 'em what I was going to tell 'em; third part I tell 'em what it was I told 'em."

Going back a short period, not over ten or twelve years ago, what were the conditions in industry? An absolute lack of consideration of safety; it was not thought of. With your pardon I will make a personal reference. I started to work in a steel mill when I was thirteen years old. I was a pretty good sized chap and able to get a job, as I represented myself older than I

was. My first job as oiler gave me a feeling of horror. When I started out on that job I had a rickety old ladder which was placed on a shaft in motion—we didn't do our oiling when the shop was shut down but while things were running—I climbed nearly to the top along the side of a thirty-inch pulley with four hundred revolutions a minute, and proceeded to oil under those conditions. A little slip on my part would have caused me to be wound around the shaft. I never have forgotten the sensation. I was fired from that job for good reason, we had an overheated bearing that caused a fire. I got out of it pretty well at that, I just took it for granted that a pulley at the end of a shaft was overhung and didn't have a bearing at the other side. There happened to be a bucket of sand and I threw that on the fire and I told them it got plugged up and got away with it. But the factory inspector came through and I wasn't quite fourteen and I got fired. I got another job and swore I was fourteen. The same factory inspector came along and said, "Aren't you Art Young?"

I said, "Yes, but I'm fourteen years old, I was fourteen last month."

"But," said the inspector, "they've changed the factory law and it's sixteen years now."

I got fired twice in the same place. But, when I returned to work in the mill I took a job in the office as a clerk, and, after a while, I was dissatisfied with the money I got and I proposed in our family circle council at home, that I could get a job in the rod mill at \$1.85, which was a lot of money. Father was perfectly willing and I was anxious to get out because it meant money. Mother opposed it because going out to work in the mill meant getting hurt.

Now, that was the accepted status of the industry at that time; when you went to work in the mill you exposed yourself to injury and it was accepted as an integral part of it; getting hurt in the mill was a part of making steel. Making steel and killing men were synonymous at that time, and no thought of safety.

During the first week that I was at work in the rod mill, I witnessed three fatal accidents. Now that isn't the average, they were bunched in that particular case—a man went through the flywheel; an oiler was whirled around a shaft, when he was lowered the body was an absolutely unrecognizable human mass. The third accident was the explosion of an emery wheel. I happened to be passing and a piece of emery wheel practically decapitated the father of a boyhood chum of mine. Yet, nobody thought at that time of preventing accidents, it was not thought of. It was not until shortly after that R. J. Young, in the reflected glory of whose name I have basked, succeeded in doing something. He was in the Illinois Steel Company and began to show that through organized effort, accidents might be prevented. Well, it really didn't take much more than the introduction of the thought, the putting up of the proposition that accidents could be prevented and it was better to prevent them than to continue as we were. It didn't require a particularly scientific demonstration, just the proposition, the thought itself that accidents were preventable seemed to be all that was necessary and everybody went to work on the proposition.

If we are to consider what have been the dividends of safety and health work, it is fair to take some of the figures and some of the experiences of the U. S. Steel Corporation as a criterion, because those figures have been very

carefully compiled and are correct. Their experience covers a large term of years and includes a greater number of men than any other single industrial enterprise.

Lack in 1906, when R. J. Young started his safety work, we had forty-six fatalities; fifty-two the year before. After spending hundreds of thousands of dollars in mechanical safeguards, and educational safeguards, and some one well qualified who could explain the different factors in the safety game, and these had been put into force and were functioning, the accidents were reduced in 1913 to seven men. Seven men were killed and the rate has consistently not risen above that — five, seven, and nine — not the old forty-six and fifty-two we used to expect.

The corporation occasionally publishes its safety bulletin and includes in that bulletin very interesting figures. They have shown recently, and in a logical manner, that the safety work has prevented thirty-five thousand fatal and serious accidents. They classify as serious accidents, those that disable a man thirty-five days or more, or permanently. Their 1906 rate, the year they began, multiplying the average number of men each year by that rate gives theoretically all of the injuries that would have occurred had they not had safety. Subtracting from that the number that actually occurred we have the number of injuries prevented by organized safety work. Over the period of years with the figures available, they say thirty-five thousand fatal and serious accidents were prevented. So far as the preventing of the other accidents is concerned, the reduction is nearly seventy per cent; in the individual plants, as high as eighty per cent.

Now, going further, they have analyzed the cost of their safety movement. They charge up against safety, the time of their inspection committees; the cost of mechanical safeguards installed; the cost of the safety department; the overhead safety expense; the cost of hospital equipment; the cost of ambulances, everything which could possibly be charged against the safety movement is so recorded in their accidents. Now they figure that they have made money on their safety work and I say to you in all sincerity and frankness, that the original start of the U. S. Steel Corporation in the organized safety work was not from an economical basis and to save money, but from a humanitarian standpoint to reduce serious injuries and death at all cost, or any cost. Taking the number of accidents prevented each year and multiplying that by the average cost of settling for the accidents incurred, would give theoretically and logically, a gross saving effected in compensation by the reduction of accidents. And, that figure consistently is just twice as great as the cost of the safety movement. It is so year after year, and consistently, in the figures of the International Harvester Company, and other companies that maintain their statistics.

So, it shows that the returns of organized safety work in the one compensation department alone, repays dollar for dollar the money put into safety and returns dividends of one hundred per cent as well.

There are certain other by-products, labor turn-over is a popular term. Various people have estimated that the cost of replacing the experienced worker with an inexperienced employee is variously from twenty to as high as two hundred dollars. The difference is largely in the way you figure and largely in the occupations themselves. But, certainly in the Steel Corporation it might be fair to assume that seventy-five dollars — an experienced worker,

a man educated in carefulness in the safety campaigns of the corporation, is worth seventy-five dollars more than the new employee. Multiplying thirty-five thousand accidents prevented—serious accidents and fatalities which need replacement of new men, there is a net by-product running into hundreds of thousands, and even millions of dollars in reduction of labor turnover through consistent accident prevention.

You, who are experienced in what the reduction in premiums is, know the possibilities of consistent safety work. As high as forty per cent has been saved in a dollar and cent profit on safety work. But there are other things. Mr. Price has particularly pointed out to you the change of attitude of men and managers. Students of social economy tell us that in the last few years a great change has occurred in industries; that the small shop managed by the owner has largely disappeared and the great establishments have taken their places where thousands of workers are engaged who don't have any contact whatever with the owners, the business being managed by the representatives of capital in the business. That has brought great economic changes in the social structure as well as industrial.

You know, you who have witnessed and watched and participated in the safety movement, that has been the forerunner and made possible other things. It wasn't until we had our safety committees functioning well and demonstrating the solution that might be received in a mutual interest turned over to the men themselves, that we began to have industrial welfare and nursing; that we began to have physical examinations of employees, periodically re-examining them. Indeed, it was not until well after the safety movement was established that the employment was functionized as it was; and safety was the forefather of these things.

Now, what has it brought? If we are to speak simply of the material things—the dollar and cent profit—we fall far short of a larger and far greater consideration. Mr. Price alluded to Mr. Shattuck's remarks as to the change in attitude of men and management. That has occurred; we have seen safety committees begin a definite task, to perform work turned over to the members themselves, and their recommendations have been put up to plant safety committees. There across the table representatives of the management and representatives of the employees have met together on a noncontroversial subject. It certainly has effective values, and as a result men and management have found that they are of the same clay; that employees below the grade of foremen and below the grade of managers have brains and can make suggestions and can work out a tangible program successfully. And so, the men and employees have come to learn through the careful consideration of their propositions, their analysis, their correction, their application, that the management, too, has brains and human sympathy. They have come to realize that they need each other's help and assistance.

In the Harvester Company I say to you in all sincerity it was the functioning of the safety committees and the propriety of their actions, and their keenness which has led us to go further with a committee system and to include in our industrial relations program the Harvester's Industrial Council; setting up in each plant a committee on which the employees and management are represented equally. The employees' representative is elected by secret ballot; the employer's representative is appointed by the management. They furnish to the council the policy of the company, including wages,

hours, working conditions, health and safety methods, and the long list of noncontroversial subjects which we formerly regarded as controversial.

The success of that would make a story in itself which I feel would be out of place to discuss here, but what I want to call your attention to particularly, is the fact that it was only because of the fairness of the employees working in the safety committees, because of the constructive measures put forward by them and the realization that the complete success of any measure which mutually affects men and management lay in their co-operation, and by their co-operation there must be a mutual assumption of responsibility and an opportunity to discharge that responsibility.

There are other by-products of safety which I would like to touch upon. They are found in these congresses. At this congress we have men who are union and nonunion men, foremen, managers, owners, doctors, lawyers—possibly thieves. But we have here representatives of all groups of society who meet in a common interest. Safety has gone far beyond its industrial mission; it has a definite relation to our social programs. Industrial engineers are realizing that in order to teach the naturally careless man to become a careful one, they have to work on him all the time. It was the industrial engineer who first branched out into public safety, and seeking to bring the information to the employee in the home as well as shop, he began in the school that the children might take safety first and learn to be careful; then he went into the churches and arranged for Safety Sundays; then the officials realizing the necessity of prevention of public accidents, asked the industrial engineers to take on public safety programs. To-day we have safety in the civic and community activities organized and conducted along the same lines as industrial safety. Here we meet all classes of society; we may have our controversies outside, men who carry a union card may care to argue with those who don't and consider things from a different light outside, but when we meet here in safety there are no controversies only in how best we may do the job. When the argument is over, if we have two plans, there is a decision as to which is the best and every one puts his shoulder to the wheel to carry on that which is acceptedly best.

What has pleased me in the safety work is the change in the minds of men, the change they undergo when the man gets, bit by bit, the safety first germ.

The products of safety to me have been friendships which I shall value all my life. When I can meet in a forum of this kind, men of the type you have been listening to, men of Mr. Little's type, of our old friend Lynch, of Commissioner Boyle, Mr. Stanion, of hundreds I might name to you who are in this work, not for what they can get out of safety—the engineer is well paid, and industrial relations managers are getting theirs, too—but they are in this work primarily because they have a vision; because they are willing to devote their time and energy to a cause which is wholly positive in its effect, to have the knowledge that when they go home at night their endeavors may have resulted in the prevention of a serious accident or a fatality. That is something that is indeed a reward to any man or woman. Some of you have had the occasion—I am speaking to the safety men—to break the news to a widow when the accident has occurred. You have had to go to that woman and tell the wife and child that her man is not coming back; that he has sustained a fatal accident.

By working consistently, hard and honestly your activities have resulted, or enthusiasm has resulted, in the activities of others, causing a reduction in suffering or death. That is the reward which can not be measured in dollars and cents; that is a reward that is worth while, which makes you feel that you are concerned in a movement, the details of which you can go home and talk over with your wife and family. They feel a pride in the work which you are engaged in, you are in a work you don't have to apologize for, that is wholly constructive and wholly worth while; that is a by-product that is worth while.

I tried to prepare a paper, and when I came to put down in dollars and cents just what were the returns of health prevention activities and safety activities in dollars and cents, I revolted. I am not a religious man, and I wish I had finer sensibilities than I have, but mere thought of taking a movement of this kind which has brought into industry and society a vision which brings all classes together in consort and in happiness, and to take that and try to make a dollar and cents return isn't right. It would be just as ethical, it seems to me, to ask what is the dividend rate of Christianity; does it pay to be a good Christian? Does it pay to worship the memory of a saintly mother? Does it pay dividends? It is just as ethical.

What are the dividends of safety? The dividends of safety ultimately, and soon possibly,—not directly in this generation, but surely in the next—are to my mind universal brotherhood of man. I see that as not a possibility, but an accomplished fact very soon, with safety the larger factor in its consummation.

DISCUSSION

MR. LITTLE: We now have the pleasure of listening to one of our esteemed and successful men in safety, Mr. John A. Robertson, of the Eastman Kodak Company.

MR. ROBERTSON: Mr. Chairman, Ladies and Gentlemen: I thought I was going to have a lot of fun tearing Arthur Young's paper to pieces, but evidently after he wrote it he had a second thought, and I am glad he drifted into the reminiscent and illustrative line rather than into the dry technical type. You have all had enough of that.

All of this detail is absolutely necessary, because in accident prevention problems, it is detail which makes up the gigantic results which have been achieved.

Mr. Young's subject was "Dividends," but he drifted into by-products. I guess I am a by-product of injury. Young had a year's start, in the industrial line, of me. I went into the woods and my first job at fourteen was to cut cord wood with no weapon except an ax, at fifty-five cents a cord. I had to work more than eight hours a day to get anything, and I hadn't been at that long when the ax slipped and went through the toe of my boot, even though it did have a copper toe. I got my first lesson in safety. I thought that work was too dangerous so I drifted into a shingle mill. I left part of one of my fingers there. I don't know what becomes of us hereafter, but I hope the Recording Angel is saving that piece of finger somewhere, so when I reach the pearly gates I can reattach it so my friends will recognize me.

I agree with Mr. Young, we can't, any of us, express the dividends obtained from this safety movement. Our good friend Elbert Hubbard, who went down

on the Lusitania, in one of his curt articles used this expression: "A thing that is not economical is immoral." I thoroughly agree with him. Now, the man who goes into safety with the expectation and the intention of increasing his dividends, is going to get mightily fooled, and he is the chap that is going to say there is nothing to it. A man or organization that goes into the safety proposition has first got to have in his heart and soul the welcome and the thought, the kindly human thought, of benefiting his fellow-man. Going into it with that idea in question, in my mind it is beyond any doubt easily proved—I can prove that it pays, and pays in money.

The trouble with us nowadays, and it reminds me of two people fighting for a paper dollar, they tear it up; the attitude should be, you give me the dollar and I'll show you where we can make two, and we will both have one. Now that is the answer.

You know the reason we won the war wasn't because we had the best general staff in the world, we didn't have the officers, but because we had the highest type of citizenship, of manhood on the face of the earth. When our boys went over there, no matter whether they were born in the United States or not, when they got over there they discovered that they had initiative and intelligence beyond the average European. They surprised them, they didn't wait for orders from their officers—they were told to simply go ahead and then they used their nuts; and that is why the German nuts were cracked so hard.

I say if I never got any other dividend, that just coming down here and meeting these good fellows is enough. I was going out this noon and I said to our friend Little about that magnificent final appeal he made, "That was a whale." And, if I never got any other dividend, it's worth a week's pay to come down here and have Jim Lynch smile at me.

Now, this thing has grown from a very small beginning, spreading out all over the country. There has been a great deal of discussion and criticism in committee work. At first they were appointed for safety. From that committee work developed the system of dividends which probably nets us \$50,000 a year. We divided it with the employees, to some extent (they don't get it all, they don't expect it), but the average American workman wants to have a part in the administration of the business which affects him. He doesn't want to go up in your executive offices and tell you what kind of a camera to make or how to advertise, or what terms, but the conditions which he comes in contact with he wants to be consulted about, and have a voice in the administration of those affairs. If we are real red-blooded Americans he is entitled to it.

Now, our first committees were appointed as safety committees, some seven, eight, or nine years ago. They inspected accidents, the cause of accidents; awards were made for suggestions, which would eliminate those accidents, and each one was studied. I am a dead letter in the accident business, I don't take any active part any more, I am a back number. A few weeks ago I was introduced as, "The Father of Safety in Rochester." I said, "I thank you, I haven't any children of my own, and I am glad to be the father of something."

We started those committees, we elect them and they discuss non-controversial subjects with employer and employee, on anything that will prevent an accident, that will prevent an unfair condition, that will preserve the health of any one. We agreed on that, there wasn't any question about

it, they turned in and used their initiative and ability and they have made it work.

For the last three years—to give you some dollar and cents returns—the last four years, we have got the lowest rate of insurance which we could get from a mutual stock company, or the state insurance fund, which they would insure our compensation hazards for. We are self-insurers, carry our own risk and charge everything up to that which rightfully belongs there, and the average figures are, that we have saved 61 per cent of the premiums we would have had to pay some one else. That isn't ethical, but that is the average of the dividends we are supposed to make, that is, the Eastman Kodak Company.

I don't know that this is a criticism or a discussion of Arthur Young's paper, but I think it is along the line of the subject, if the chairman doesn't call me down. You are all tired, you have had an interesting time, and the only message that I have to leave with you is to forget a lot of the stuff you have heard here. Don't let it tangle up your brain and make you web-footed. There are a few things that will stick, if you think that is a good thing, make a note of it and when you go back home—I don't care what your job is, foreman, safety engineer, workman, or inspector—say, "I am going to prevent one accident before I come to the Safety Congress next year. I am going to advise one man he is doing an unsafe thing. I am going to say a kind word to the new man in the shop who comes in and is nervous, upset about the conditions. I am going to make this shop a little better place to work in. I am going to make a little better American citizen."

Talking about American citizenship, last night when I sat down to my dinner I was very much surprised to hear the waiter call me by name. I looked at him and recognized a young Italian whom I had noticed in Rochester. I said, "How long have you been here?"

"I just got back from over on the other side."

"Were you drafted?"

"Oh no, I couldn't get back to Italy, so I went over to Canada and enlisted in the Canadian Army and went over to England. I was three years on the French Front and three months on the Italian Front."

Then he reached in his pocket and showed me his record. Distinguished Service Medal from Great Britain, Croix de Guerre from France, the Italian Medal for bravery—I won't attempt to name it. He is back on the job waiting on tables. I wish half the American born citizens were that kind of Americans.

That is the problem today. If any of you read President Wilson's address or message to Congress which deals with the labor situation, you have got an ideal document. I am happy to say this because there are a lot of things which I don't feel that way about. That labor situation is not the ideal, of course, he can't, nobody else can tell us how to work it out. We have to work it out in our individual plants to get the big foundation and this cooperation. If you had mentioned a meeting like this ten years ago they would have thought you a nut; that is what we are being educated to. You can't forge ahead of the game, you have to come along with the crowd. A fellow in the rear rank can't get up in front in a minute, but we are going to work out the safety problems and industrial problems along those lines, taking the other fellow into consideration and finding out what he wants.

Our final disputes at the camera works are settled by a joint committee of seven employees and seven from the executive force. When we have something come up we get around the table and talk about it. So far there hasn't been a single subject come before us that we didn't have a unanimous vote on. They are making the rules they are going to live by and we are dividing with them some of the responsibilities of management.

Now, just one other matter which I have been requested to bring before you before I take my seat. We have all missed the genial face of the former chairman of the New York State Industrial Commission, John Mitchell. He was a real red-blooded American citizen with an unusual ability to judge men; with an unusually logical way to arrive at conclusions; with an unusual amount of patience. He was ideally fitted for the position which he occupied and the longer he remained in it, the higher the esteem of men, manufacturers and those under him and with him grew. It was a real loss, not only to the Commission of the State of New York, but to every one of us, to every workman, to every employer in the United States when John Mitchell passed out. I have been asked by some of his friends on the Commission to introduce this resolution:

RESOLUTION IN MEMORY OF JOHN MITCHELL

One year ago, at the Third Industrial Safety Congress, we had with us as an active participant in the proceedings, intensely interested as always in any measure for the prevention of industrial accidents, the then Chairman of the Industrial Commission, the Honorable John Mitchell. Since that time, death has removed this great man from the field of human endeavor. All of us knew him as one of the leaders in the thought of the Nation, as a great citizen, and as a man, many of us were proud to call him a personal friend. The proceedings of this Fourth Industrial Safety Congress would not be complete without some record of regret at the passing of John Mitchell.

THEREFORE, *Be It Resolved*, That the Fourth Industrial Safety Congress, in session assembled at Syracuse, New York, hereby expresses its deep sense of regret at the death of John Mitchell, its appreciation of his life work, its high regard for his character as a man and a citizen, and its expression of condolence to his bereaved family.

Resolved, That a copy of these resolutions be furnished to the State Industrial Commission for transmission to the widow of John Mitchell, and for publication in its official Bulletin.

I move the adoption of this resolution.

MR. LITTLE: You have heard the resolution. We will not revert to the subject of the afternoon, as we have had a fitting close to that. This is an important matter which touches us all so deeply. Are there any who wish to say something? We will wait a moment.

Perhaps the resolution itself voices the deep thought and sympathy, and sense of loss that we all feel, that Mr. John Mitchell is not with us today. We all cherish his memory as that of one of our Great Americans. His well-poised, sane judgment, broad sympathy, skillful and strong in his work with men of affairs, have left an indelible impression on the industrial life of this great commonwealth and this great country of ours. John Mitchell was possible in America, might have been in some other country, but it was here that that singular soul grew up out of humility, much adversity, overcame hardships, and battled against the almost insurmountable and achieved success. He is gone from us, and yet he is with us.

All who are in favor of the resolution will kindly rise.

It is unanimously adopted.

THURSDAY MORNING, DECEMBER 4

INSPECTOR'S DAY

PRESIDING OFFICER: JAMES L. GERNON, FIRST DEPUTY, NEW YORK STATE
INDUSTRIAL COMMISSION

MR. GERNON: This is the last day of the Congress and I am sure most of use here feel that it isn't the least important. The papers of today are designed with the idea of teaching those who are not part of the inspection force, some of the difficulties the inspector has to encounter. The first paper will indicate how difficult it has been in the past to secure legislation upon which the work of the inspectors is based.

It seems strange in these days, that the State—not only this State, but all States and in fact the nation—fails to realize that the conservation of human life is far more important than the conservation of some of our animals. But, they are coming to a better realization of what is necessary for the conservation of life and the protection of those who toil.

Many of you have heard me say on more than one occasion, that nothing is so wasteful as industry. There isn't any question about that. Nobody sees it more clearly than does the inspector who, in plant after plant, sees all these things. And if by some means either by legislation or good business methods, industry could be conducted so that those who are unfortunate enough to be injured would be properly compensated—which they are not at present—the cost of such work would be a small decimal of what is lost.

We have listened this week to different people who have talked of safety engineering; we have seen in the last ten years the development of our compensation laws; we have many agencies private and public, which endeavor to conserve public health and make conditions better generally for the people who have to toil. There are more names given to these efforts than we can remember off hand, and I have come to the thought that there is one phrase that properly sums up the work of a factory inspector and all of these agencies, and that is, the term of human engineering. The number of people that are injured is far too great. We can point with gratification to the reduction of the number of accidents in this State and I know of no agency that promotes this more than does the inspector in the Industrial Commission. Still, the number is far too great.

Last year there were reported to the Commission, approximately three hundred thousand accidents. Out of that three hundred thousand, there were almost fifty thousand claims for compensation. There were slightly over fifteen hundred deaths, entirely too many.

Now, the point I wish to convey most forcibly, is this, while this is the aggregate of industries as they are defined under the 45 groups coming under the compensation law, they don't all happen in factories and mercantile establishments such as are covered by the activities of the inspectors. Under the compensation law, we have the industries that are protected by the compensation law about forty-five groups, and those groups that come under

the inspection either wholly or partially approximate twenty-five. Those that are outside the activities of the inspectors are the most hazardous and consequently produce the most deaths and injuries.

I don't mention this because we need any more work to do, we have more now than it is possible for this force to do. But, the figures demonstrate very conclusively that it is the duty of this State to provide a force that will give ample protection to all of the workers of this State.

Take the class of industry that Commissioner Lynch mentioned on Monday, that of longshoring, and transportation which is incidental to that kind of work. If there were a method of inspection that covered that, the good that could be done, the improvement in the ways and maintenance and the appliances that these men have to use in their daily toil, would be wonderful and many deaths and injuries prevented.

As we see the headings of these papers, some of those that are not familiar with the work might think they don't just apply to this Congress. We are making a slight change in the program and paper number two will be read first. That is the way it should have appeared on the program.

In presenting this paper the effort is to show the slow progress in work that was recognized from the beginning, that vast improvements should be made in labor legislation. Both the manufacturer and the worker are interested in this, and it is to be said to the credit of the labor organizations that they were the people who insisted on this legislation in its beginning. Under the old method of liability for industrial accidents, the worker bore practically all of the cost because what he got under the liability laws was so small that it was hardly worth considering. Still, it cost the manufacturer probably as much as it does now, and when the workers realized this, they insisted on different legislation. As a result we have the compensation laws, which, with the change in the standard of wages, need to be greatly rectified.

We will now begin the program by the reading of the paper by Mr. M. J. Flanagan of the State Industrial Commission.

DEVELOPMENT OF THE LABOR LAW IN NEW YORK STATE

BY M. J. FLANAGAN, SUPERVISING FACTORY INSPECTOR, NEW YORK STATE INDUSTRIAL COMMISSION

The discussion of this subject within a limited time must needs leave out much that may be pertinent thereto.

Prior to 1883 there were laws on labor in a general way which did not possess value for the reason that there was no enforcing power. The first law of value was enacted in that year by creating the Bureau of Labor Statistics, with power to make investigations and report on the conditions of labor. After the publication of these reports, the citizens of the State became aware that children of tender years were found working eleven hours per day, at work that was entirely unsuited for them. The sanitary conditions under which men, women, and children had to toil were found to be most deplorable. Laws then in existence requiring seats for females in manufacturing and mercantile establishments were almost universally ignored.

Thus we come to the year 1886, and the creation of the Bureau of Factory Inspection. Two inspectors were appointed and compelled to work under serious difficulties; no office room nor clerical help were provided for them. The laws they were directed to enforce were to prohibit the employment of children under 13 years of age in factories, and to limit the hours of labor of children, females and minors in factories to not more than sixty hours per week. These two new labor laws were very loosely drawn, as the parent, guardian, or the child itself, could make an affidavit as to the child's age. There were no restrictions as to the number of hours per day a child, female or minor could work, so long as there were not more than sixty hours worked within the week. In the first report of the Chief Factory Inspector it was stated that "The number of parents who were willing to commit perjury, in order to keep their children employed in factories was enormous, * * *" and it was noted that the law did not apply to mercantile establishments. Thus females employed in factories, operated in connection with mercantile establishments, could continue working in the store after completing their day's work in the factory, while the hours they were at work in the mercantile establishment could not be counted in computing the sixty hours per week to which such workers were restricted.

The defects in the law relative to the manner of furnishing proof of the age of children, were called to the attention of the Legislature in the reports of several chief factory inspectors and some of the Commissioners of Labor who succeeded them. In the year 1901 an investigation made relative to this subject by several deputy factory inspectors, who visited a large mill in Brooklyn, discovered about 150 children at work, of whom 36 had the same family name and the same parents. According to the employment certificates on file, which were issued on the affidavits of eighteen mothers, each of them had two children born to them with a time between births that varied from six weeks to three months. More than fifteen years elapsed between the time this defect in the law was first called to the attention of the Legislature and the passage of a law making the proof of age mandatory previous to the issuance of an employment certificate. Again more than eleven years elapsed after the defect shown by the first Chief Factory Inspector, relative to the employment of women in a factory connected with a mercantile establishment, before laws were passed which would prevent this evil. Throughout the reports of all the Chief Factory Inspectors or their successors under other titles, we find warnings and recommendations relative to defects in the labor laws. In 1897 the report of the Chief Factory Inspector called attention to the danger existing where approaches to fire escapes were not of suitable size to admit persons to the escapes, and he also mentioned the fact that the employees were not drilled as to the exact location of these exits, yet it was not until the year 1913, after a legislative investigation, brought about by a disastrous fire in a factory building resulting in the loss of more than 140 lives, that laws were enacted to provide proper and safe escape in case of fire, and requiring the location of fire escapes to be indicated so that all employees might easily find them.

During the first ten years a number of laws were enacted, so that commencing the year 1896 we find the following changes and additions: Prohibiting the employment of children under 14 years in factories; regulating hours

per day and per week for children, women and minors; guarding machinery, machinery not to be cleaned while in motion; guarding elevator approaches, age at which persons could operate elevators; sanitary conveniences for females; safe stairways; unlocked doors; fire escapes; exhaust fans for removing dust; cleanliness and ventilation of workrooms; making buildings safe; accident reports; controlling manufacture in tenements; weekly and cash payments of wages; regulating hours and conditions in bakeries; inspection of mines added to duties of factory inspectors. Nearly all these laws were so loosely drawn that they possessed more value as instructions showing how a factory should be conducted than they did as laws compelling operation in a described manner.

All inspectors or executives, who at various times had to do with the enforcement of the labor laws, became enthusiasts in promoting the development of these laws. One of the principal studies was accident reports. Very early in the life of the inspection service, these reports were in demand as evidence in the many suits going on to recover for injuries. As soon as their value as a court document became generally known, there was a strong tendency to either not report an accident, or to report it in such a way that it possessed little value to the inspector. The change made in that section was by request of the department head to the Legislature, asking for the additional clause: "This report will not be admissible as evidence in court." The results of this amendment were a large addition to the number of reports, and a very much clearer statement as to how and what conditions were surrounding the accident. A further study by the then executive head of the inspection department brought to him the conclusion that no matter how well or carefully a plant might be guarded, there were some injuries to those employed therein that were chargeable to the industry. It was therefore recommended to the Governor and by him to the Legislature that a Commission be appointed with a view to creating a compensation bureau, to administer a just compensation law, to the end that the injured would receive whatever benefit there might be from moneys expended in place of paying attorneys on both sides who set up legal quibbles for and against.

This brings us to the year 1909, just prior to the investigation and report of the Wainwright Commission, and we find the laws have been developed so as to include the following: eight hours per day and the prevailing rate of wages on public works; ten hours per day in brickyards owned by a corporation; ten hours per day operating railroads; eight hours per day for telephone or telegraph operators moving trains; employees to be preferred debtors; prohibiting assignment of future wages; safe scaffolding; safe ladders; properly protected floor openings; floorings to be covered over in construction or repair of buildings; positive proof of child's age and limiting work to eight hours per day and 48 hours per week; inspection of boilers in factories; laundries to be inspected as factories; prohibiting children from operating dangerous machines or from being employed at industries dangerous to health; defining a tenant factory building; providing for the use of unsafe tags to apply to dangerous machinery, and for the use of unclean tags to apply to articles in unclean factories; several sections of laws relating to mercantile establishments, which will be treated in another paper.

Thus the labor laws as they apply to factories have been in operation for

23 years, during which time some development has been made. We note that every chief inspector, commissioner or executive of the inspection division, has in his annual report called attention to the number of defects in the laws, and the necessity for an adequate force of inspectors to properly enforce same. In the report of the Wainwright Commission of 1910 and 1911 it was stated that the inspection force was insufficient to cope with the work of preventing accidents. Also in the factory Investigating Commission's report in 1912—"There should be more adequate protection and supervision of the workingman, and the conditions under which manufacture is carried on; existing laws should be enforced and carefully revised, so that life may be preserved, that conditions may be bettered, and that the State and nation may gain in economic wealth and industrial prosperity."

Following out these recommendations, several additional laws were developed, the principal features of which were: better and more definite laws relative to fire protection and accident prevention; to prevent industrial poisoning; creating a high standard of sanitation; a day of rest law; laws relating to employment of females after child birth; period of rest at night; creating an employment bureau; regulating labor camps; a division of industrial hygiene to investigate and collect information relative to industrial accidents and occupational diseases; a section creating an industrial board with power to make rules and regulations for the prevention of accidents, and guarding against, also minimizing fire hazards, so that all factories, factory buildings, and other places to which this chapter is applicable shall be so constructed, equipped, arranged, operated and conducted as to provide reasonable and adequate protection to the lives, health and safety of all persons employed therein.

In 1915 the then existing Department of Labor and the Workmen's Compensation Commission were merged into the Industrial Commission. The power to make rules conferred on the Industrial Board in 1913 was transferred to the Industrial Commission.

Some outline of how rules are made may be pertinent. The Deputy Commissioners of the Bureau of Industrial Code appoint a committee equally representative of employees and employers, and also experts to advise them. Meetings are called, subjects discussed and a draft of tentative rules drawn up. The committee visits plants to get further practical knowledge and copies of the tentative rules are distributed, sufficiently far ahead to enable all to become familiar with their contents. Rules are then considered in detail; all necessary changes are made, so as to get as nearly as possible a united opinion prior to calling public meetings. These are advertised and held in different parts of the State. After the minutes of the public meetings are written, the general committee again assembles and makes such changes as seem advisable, after reviewing suggestions brought out at public hearings. Rules are then ready for final action by the Commission.

The present labor laws contain more than two hundred sections, over four hundred code rules, and may seem to cover every hazard in connection with industry, yet we find there are forty-six groups of workers enumerated in the Workmen's Compensation Law who are entitled to compensation for injuries and only twenty-one of these groups are fully covered by our inspection, six groups are partially covered and nineteen groups are entirely out-

side the line of inspection. Some examples of the difference in coverage between the Workmen's Compensation Law and the Labor Law are as follows: Group 9, which reads, "Shipbuilding including construction and repair in a shipyard or elsewhere." The Labor Law defines a factory as follows: "The term factory includes a mill, workshop, etc., where one or more persons are employed, making, altering, repairing, etc., except dry dock plants engaged in making repairs to ships." In a yard in which vessels were built and repaired but had a dry dock connected with it, the courts held that the Labor Law did not apply.

Group 12: Operation of electric lights, electric power lines, dynamos or appliances, and power transmission. Office buildings, in some of which as many as twenty-five persons are employed at generating electric light and power are not factories within the meaning of the Labor Law according to court decisions.

Group 39: Power laundries, etc. According to the Labor Law "A shop, room or building where one or more persons are employed in doing public laundry work by way of trade or for purposes of gain" is a factory. The Attorney-General has ruled that a hotel laundry is not a public laundry. Investigations made have shown that many of our hotel laundries, do work for guests, have serious hazards, such as unguarded machinery, hours that would be illegal under the labor laws, and many other conditions requiring the attention of the inspection force.

In the early development of the labor laws, organized labor was the main force urging the passage and enforcement of these laws. They were sometimes supported by associations of public-spirited men and women who have secured the attention of the Legislature, when they failed to hear the recommendations and warnings of the executive officers of the department. Within the past few years reports received from several large producing plants show that they are leaders in the movement for safety and sanitation, so that we may expect that industry will soon take the place of labor in urging more and better labor laws.

Although the labor laws of New York compare favorably with those of any other State, it is my opinion that the laws of New York could be further developed in the interest of the workers and as a paying investment to industry by applying the inspection features of the law as far as practicable in all industrial operations enumerated in the forty-six groups of the compensation law. This would prevent many injuries to employees and also greatly reduce the cost of accidents to industry.

DISCUSSION

MR. GERNON: We will now have a discussion of Mr. Flanagan's paper by several of the inspectors, after which we will let anybody, who desires, discuss the paper, or ask any questions.

The first person to discuss Mr. Flanagan's paper is Mrs. M. G. Davie, Factory Inspector, New York City.

MRS. M. G. DAVIE: Mr. Chairman, Ladies and Gentlemen: The most important step in the development of the labor laws, in my opinion, was the power conferred by the Legislature in 1913 on the Industrial Board, and

later the Industrial Commission, to amplify the laws and make code rules having the full force and effect of law. Since then over four hundred rules have been made, covering in a specific and comprehensive way the subjects to which they relate. If these had to be enacted into statutory laws by the Legislature, it would probably take another twenty-five years to reach the present development of the law.

The codes make for a better enforcement of the law, affording as they do, standards to guide the inspectors. Take the machinery code. Under the old section 81 of the Labor Law which provided that machinery should be properly guarded, much depended upon the judgment and experience of the individual inspector, and there was considerable conflict of opinion as to when it was necessary to guard a machine, or a belt, or shafting, and what constituted a proper guard. The same applies to the lighting, ventilation and sanitation of factories, the statutory laws being general in character.

The development of the laws relating to children in factories has been steady up to the year 1913. The working age has been raised from thirteen to fourteen years; the weekly hours have been reduced from sixty to forty-eight, and the daily hours to eight. Their employment is prohibited on certain woodworking machines, picker machines, power-printing presses, drill presses, cutting and stamping machines, power punches, and other dangerous machinery. Their employment is also prohibited in certain factories in which the industrial poison hazard is present. They are also prohibited from working in mines and quarries and operating elevators in factories.

There has been considerable progress in our laws promoting the safety and welfare of women. In 1886 we find only two laws relating particularly to women, one requiring seats in factories and mercantile establishments, and one limiting their weekly hours to sixty. The present laws limit their hours to fifty-four per week, and ten per day, and require the posting of a schedule of daily hours. Before this was required, it was extremely difficult to successfully enforce this law, and in a prosecution we had to depend upon the testimony of the employee, who, in many cases, was compelled to choose between the loss of her job and perjury.

In addition to laws prohibiting the employment of women on emery and luffing wheels, and prohibiting women under twenty-one cleaning machinery while in motion, and women under eighteen operating elevators, the Industrial Commission has adopted two code bulletins regulating conditions of their employment in canneries and in core rooms of foundries. In the Commission's sanitary code there are many rules providing for the comfort and convenience of women.

I would like to emphasize the necessity of the change in the law covering the inspection of hotel laundries. I remember investigating a complaint about four years ago of a prominent hotel laundry in which women worked ten hours a day, seven days a week, under unsanitary conditions, with machinery unguarded.

There is reason to expect there will be much further extension of the rules promoting the safety, health, and comfort of women and children in industry, and it is to be hoped that laws will be passed bringing within the jurisdiction of the Industrial Commission, other groups covered by the Compensation Law.

MR. GERON: We will hear from Mr. J. G. Bollinger, Factory Inspector, New York City.

MR. J. G. BOLLINGER: Mr. Chairman, Ladies and Gentlemen: After listening to the paper just read by Mr. Flanagan on the subject of the "Development of the Labor Law," I find it difficult to discuss same owing to the fact that he has covered the ground so thoroughly.

In taking up the new code on scaffolding, etc., of buildings in course of construction and repair, may I suggest that not only the scaffolding runways, ladders, floor openings, and floors be covered in the course of construction, but that also all hoisting machinery, cables, tackle chains, and slings be inspected carefully and frequently. There should be a safety standard for the size of chains for loads to be lifted. The pneumatic tools, such as riveting hammers, have a safety device to prevent the cup from being blown accidentally from the gun and falling, perhaps, on the head of another workman below. As you know, the cry of "Look out below" is generally given after the head has been hit. The chains used, such as sling chains and those used on blocks, should be carefully inspected for weak links, and all chains to be annealed periodically to remove strains.

On the question of the sanitary code we find that the sanitary conveniences years ago were hardly ever adapted to the needs of the workman; wash basins in some factories were unknown, or in insufficient numbers, so that the employee had to go home dirty and grimy. If he wanted to wash up he usually found an old paint can which he converted to his use as a wash basin.

Then again, the toilet conveniences were such that often the employer thought if he provided a sufficient number for the wants of his workmen he was afraid they would be used as a hang-out. This, I am glad to say, the up-to-date manufacturer has overcome, and has provided proper and sufficient sanitary conveniences for his employees. Still, there are a great number of factories in which the question of sanitation could be improved upon.

As a rule the machinery code on guarding dangerous machinery is complied with by the up-to-date manufacturer who has a working safety committee, or a safety inspector or foreman to look after safety conditions. I might say that the foreman, safety inspectors, and safety engineers, who are present, I believe, represent firms who employ at least from five hundred to ten thousand workmen. How about the small manufacturer who employs from twenty-five to five hundred men at hazardous trade? He has no safety man, or invariably takes no interest in these safety congresses. As a rule (I do not say all of them), they comply with the orders of the Department of Labor by haphazard guards, or only guards his machines when he is notified that they will be tagged with the unsafe tag if not properly guarded.

During the year 1918-1919, there were over sixty-five thousand inspections of factories made in New York State, of which over forty-five thousand were made in the first inspection district (which comprises Greater New York and Long Island) in which there are over seven hundred thousand workmen employed. Still, at this Congress we find few, if any, of the manufacturers of Greater New York taking any active part in the discussion of papers. If the Industrial Commission, or those in charge of the Congress, could induce some of the manufacturers to take an active interest in the safety movement

and get them to express their views on the question, I feel that this auditorium would not be large enough to hold the crowd.

MR. GERON: Mr. Bollinger referred to the number of factory inspections in 1918. Since then we have had another fiscal year which developed that there are sixty-seven thousand four hundred and twenty-four factories in the State of New York.

In my opening talk I mentioned the fifty thousand compensation claims. Measuring the work that this force does, you will notice that the claims for compensation do not equal in number the factories in the State. Of course, some of the factories are small, but many of them are large; still, with the fifty thousand compensation claims there isn't a claim for each factory in the State, notwithstanding the fact that the claims cover all of these forty-five groups in the compensation law to which Mr. Flanagan referred.

It is generally supposed that in mercantile establishments there are no hazards only those of long hours. The next paper will deal with that subject, and we will realize when the paper is finished that there are more hazards than the hazards of hours. We will now have the "Hazards in Mercantile Establishments" by Mr. J. F. Tewey of the State Industrial Commission.

HAZARDS IN MERCANTILE ESTABLISHMENTS

By J. F. TEWEY, MERCANTILE INSPECTOR, NEW YORK STATE INDUSTRIAL COMMISSION

Before I start my paper it will be well for me to admit that when the Chief Mercantile Inspector imparted the glad tidings to me that I was to be honored by preparing a paper for the Safety Congress I felt very much like the man on the gibbet after the trap had been sprung, words failed me.

However, feeling that since I live in a small village and, as the late lamented Julius Caesar once said, "It is better to be first in a village than second in a city," I immediately got busy.

The State, which is the natural protector of the health and well-being of its citizens, has seen fit to provide certain regulations under which its people may labor. Not the least of these are the laws affecting persons employed in mercantile establishments. There are very few who are not acquainted with the measures relating to the employment of women and children in factories, and with the various statutes that afford protection and proper sanitary conditions to those employed therein; but how many are familiar with the provisions of law affecting those employed in mercantile establishments? Unfortunately, the number is not very great.

This lack of knowledge is due primarily to the fact that there is a division of authority in the enforcement of the law. The mercantile law, as this act is commonly called, applies to all cities, towns, and villages, that have a population of three thousand inhabitants or more. It is enforced in villages and towns by the local health boards, and in cities by the mercantile division of the Bureau of Inspection.

Prior to October 1, 1908, the mercantile law was enforced in all places

to which it applied by the local health authorities. The unsatisfactory manner in which its provisions were carried out, and the force of public opinion, brought the legislature to realize the necessity of a change in the enforcing agency. Accordingly, on that date, the Bureau of Mercantile Inspection was instituted. The inspection force consisted of eight deputies, and their activities were limited to the three first class cities of the State, New York, Buffalo and Rochester.

The jurisdiction of the bureau was extended to the second class cities in 1913, and to the third class cities in May of the present year. It is hoped that the legislature, realizing the great benefits that have resulted from the enforcement of the law by the Department of Labor in cities will extend its jurisdiction to all villages, at the coming session. It would be necessary to increase the present inadequate force of thirty inspectors, but the good thus accomplished would be well worth the cost.

Each section of the inspection bureau has its own particular problem. The vital problem of the mercantile division is child labor. Child labor may be considered a hazard, although possibly not from the view-point of the safety engineer. Nevertheless, it is an evil that should be eradicated. The peculiar thing about child labor is that it seems to increase rather than decrease, despite the fact that the law is vigorously enforced. This is due, in a measure, to the present economic conditions; but it is due principally to the fact that child labor is cheap, and a source of great profit to an unscrupulous employer. Then again, offenders are taken into court and receiving a suspension of sentence in many instances, are thereby encouraged to persist in violating the law. For example, a vegetable peddler in a city employed a ten-year-old boy to deliver vegetables from his wagon. A dumb waiter fell upon the boy and killed him instantly. Shortly after, an inspector was sent to investigate the matter, and found the peddler on his route with a boy of nine years in his employ. In court, the peddler received a suspension of sentence. The peddler still employs boys but not inside the city limits. We can do nothing to prevent it, since our jurisdiction does not extend into villages.

Any child who leaves school before the age of sixteen years to enter industry, in any capacity, suffers a distinct loss. Up to this age, a child's mind receives and retains impressions that will be a determining factor in his future life. The State, therefore, should endeavor to keep its children in school in order that they may be developed and strengthened, physically and mentally, thereby to become a valuable asset to society. It is a well known fact that very few of the more progressive and far-seeing manufacturers and merchants will engage a child under the age of sixteen years. What is the result? The result is that children are compelled to seek employment in occupations for which their strength is unsuited; they are required to endure conditions detrimental to their health and morals, and what should be particularly avoided, they are likely to fall into a rut, from which they may not be able to extricate themselves, due to lack of sufficient education and training. Four hundred and four children under the age of sixteen years were found illegally employed in the mercantile establishments of this State during the month of September. Surely, this should afford considerable food for thought.

The question of hazards presents a very important problem, and one which is frequently lost sight of, in its relation to mercantile establishments. Unlike factories, in mercantile buildings the safety of the general public as well as that of the employees is involved. When it is realized that in the large department stores, employing approximately five thousand persons, at least fifty thousand customers are served in a day, then it can be readily seen how vital is the necessity of providing protection against danger to such a vast assemblage.

The principal hazard in any large mercantile establishment is that of fire, and the panic that invariably ensues. At present, there is no provision in the mercantile law requiring measures for fire prevention, or means of escape in the event that fire occurs. All that can be done now to minimize the fire hazard is to see that there is no accumulation of waste and rubbish, and this we do from a sanitary standpoint. The fire peril in a mercantile establishment is a most dangerous one, due principally to the nature of the stock carried. Celluloid articles, chemicals, paints, dry goods, paper goods, furniture, all highly inflammable and combustible, tend to create a condition that might prove an efficient aid to disaster. A building might be entirely fire-proof and equipped with the most approved type of exits, but with a stock such as is described above, it is easy to imagine what could happen if fire occurred during the busy hours. Preventive measures are best and in the end less expensive. In the large buildings a sprinkler system could be installed which would perform a two-fold service, namely, transmit an alarm to the fire department headquarters, and at once throw water on the fire at its inception. The placing of approved portable fire appliances at convenient places throughout the building, and the instruction of the employees in their use would also tend to minimize the danger. Celluloid materials, chemicals and paints should be kept either in especially prepared rooms, or in places remote from stairways, elevators, and main aisles.

The question of exits is one which should be given careful attention. The present law contains no provisions relating to exits from mercantile buildings. Doors are not required to open outward. Stairways, as a rule are constructed of wood, and are not required to be inclosed with fire-proof or fire-resisting materials. Since, in many instances, the terminals of stairways are inside the buildings, it is a mooted question as to their value as a safe means of egress. In most mercantile establishments the stairways are adjacent to elevator shafts. The law does not require the inclosing of shaftways, consequently, in case of fire originating in the basement, or on the lower floors, the stairways might be involved and escape cut off. The Industrial Commission, at the present time, is engaged in formulating rules that will require proper exit facilities from mercantile establishments.

In the small mercantile buildings there are often times many persons, chiefly women and children, employed in basements. In this class of establishments the danger of fire is very great. This is due to the large amount of reserve stock stored therein. This stock usually occupies most of the space between the floor and ceiling, and is highly inflammable. Smoking is not prohibited in mercantile establishments, and a match or cigarette carelessly thrown away may be the cause of serious damage and loss of life. Generally, there is but one stairway leading from the basement to the

street floor. Unquestionably, this is a condition which demands immediate correction.

Existing fire escapes on mercantile buildings often increase rather than minimize the hazard. Windows and openings along the course of the fire escapes are not required to be fire-proofed. Then, as there is no law requiring aisles to be kept clear, obstructions may bar the way to the landings. Doors opening onto fire escapes may be locked, even during working hours. This condition is not confined to any particular class of establishments, nor is it an uncommon practice. Sometime ago an inspector was sent to examine the exit facilities of a four-story, brick, non-fire-proof mercantile building. There is an exterior iron stairway at the rear of the building which is the chief means of safety in case of fire. At the time of the inspector's visit the doors leading to the escape on two of the floors were locked and fastened. One door, after being unfastened was found to be so tightly fitted that it took considerable time to open it. Had an emergency arisen, the sole means of safety would have proven useless. It is to be hoped that the State, cognizant of the danger existing from fire in mercantile establishments, will enact suitable measures tending to reduce this hazard before disaster overtakes any of its citizens.

Another very important hazard found in mercantile establishments is that occasioned by passenger and freight elevators and elevator shaftways. In factories this hazard has been reduced to a minimum due to the provisions of the law and the rules of the industrial code. In mercantile establishments no safeguards are required either for elevators or for elevator shaftways, consequently there is an ever present chance that something might happen. In factories, no child under the age of sixteen years is allowed to operate any elevator, and no person under the age of eighteen years is permitted to operate an elevator, the speed of which is over two hundred feet a minute. But in mercantile or office buildings, or in an apartment house, while no female under the age of eighteen years is allowed to operate an elevator, a male between the ages of fourteen and sixteen years may operate any elevator regardless of its speed, provided he has an employment certificate. Here, again, we have a condition, whereby the safety of the general public as well as that of the child who operates the elevator is placed in jeopardy. It does not seem reasonable that a child under the age of sixteen years should be in charge of an elevator carrying a large number of persons. In the first place, he is hardly capable of realizing the responsibility placed upon him, and, in the second place, he is apt to become careless due to having his mind concentrated upon those about him rather than upon the management of the car. It is imperative that the law be amended so that no person under the age of eighteen years shall be permitted to operate any elevator; and that proper safeguards shall be provided for all elevators, elevator shafts and hoistways in mercantile and office buildings as well as in all classes of buildings where the present elevator law applies.

Contrary to popular belief, considerable machinery is met with in mercantile establishments. Some of the larger establishments are equipped with woodworking machines used in the manufacture of packing cases. The provisions of the industrial code, which require that machinery shall be properly guarded, apply to mercantile establishments as well as to factories. As a result, protection is afforded those employees whose duty brings them

into contact with elevator machinery, refrigerating machinery, electric motors, and various machines that are common to certain kinds of mercantile establishments.

In many buildings visited by the inspectors of the mercantile division, numerous hazards are found, the existence of which is due to the apparent neglect of those who have charge of the property. The chief dangers are loose plaster of the walls and ceiling; defective flooring; worn-out and loose treads of stairs; stairs with treads missing. Frequently, the top or bottom tread of stairs leading from a store to the cellar is missing. This presents a typical hazard usually found in the smaller establishments. Then, too, stairways are found with broken or defective handrails, or provided with no handrails at all, ideal conditions for accidents to life or limb.

In the matter of securing compliances with orders issued to correct conditions such as are described above, comparatively little difficulty is encountered. This is due, in a great measure, to the active spirit of co-operation shown by those whose premises are affected. The number of requests made by property owners and proprietors of mercantile establishments as to the proper method of complying with orders issued is a source of great satisfaction to those in charge of the Bureau, and this satisfaction is greatly increased by the appreciation that is expressed when the orders are explained in such a manner that a material financial saving is accomplished. However, there are those who pay absolutely no attention to orders issued. It then becomes necessary to invoke the aid of the courts to secure a proper compliance. A case in point aptly illustrates the above type of property holder. Orders were issued in a certain city directing the owner of a mercantile building to provide proper ventilation for a lavatory. No attention was paid to the notices that were sent him. The district inspector was sent to see the owner and in the course of the conversation the owner stated that he would gladly do little things, such as repairing a door or the like, but the larger matters would have to be attended to by the tenant. Finally, a summons was issued and court action was begun. Upon his appearance in court, the owner stated that he would do the work at once. It was remarkable what a change in his attitude toward the law was produced by a half day in court.

At the present time, accidents occurring in mercantile establishments that are included in the groups requiring the payment of compensation must be reported to the Department of Labor. However, all mercantile establishments are not required to carry compensation insurance. Therefore, we are unable to determine, with any degree of accuracy, the number of accidents that have occurred in a given year, or the loss of time and money resulting therefrom. But the experience of the division has shown that hazards exist and that remedial legislation is necessary to remove them.

Public opinion is gradually beginning to realize the benefits of labor legislation. It is now almost universally recognized that where the conditions of those who labor have been improved, there exist better conditions in the community itself; higher standards of living result; better facilities for education are provided, and, consequently, a higher grade of intelligence is attained. According to those who are charged with the enforcement of the Labor Law in this State, safety and justice demand that all those engaged in any kind of employment should be accorded protection. Hazards in all occupations

must be eliminated. The welfare of those employed in mercantile establishments in all villages is as important as that of those employed in cities, and, therefore, the State must extend the jurisdiction of the mercantile division to all villages. It is upon this, then, that we base our hope and we trust that the State, conscious of its duty, will extend the full measure of its protection to those who are without it.

DISCUSSION

MR. GERON: We will now have a discussion of Mr. Tewey's paper by Mr. N. H. Hertzberger, Factory Inspector, New York City.

MR. N. H. HERTZBERGER: Regarding the hazards in mercantile establishments as outlined in Mr. Tewey's paper, I believe that before I take up the point that occurred to me in that paper, I will go back to the first paper read this morning by Mr. Flanagan, with reference to the development of the labor laws in New York State. What applied to the labor laws as regards factories, applies with equal force to-day to the mercantile establishments, although it isn't recognized as such in the safety movement of this State. The parts that Mr. Flanagan outlined in his paper, with reference to approaches to elevators and hours of labor for the people employed in factories, and the other hazards and comfort appliances, apply with equal force to the mercantile establishments, and if we are to consider that hazards are not only those influences which cause accidents and physical discomfort, but also such things as mental hazards which tend to hurt the employee and prevent him from discharging his full duties as required by his employer, then we will consider that the hazards in mercantile establishments—as the Chairman of this meeting says—are more than those of long hours.

On Foreman's Day, one of the speakers was very careful to say the foreman was to be sympathetic, get the human element, pat the man on the back, and say, "How are the children to-day?"; and the other fellow who lost his dog, "Did your dog come back?" Who is going to ask, and who does ask, the employee in a mercantile establishment of any considerable size, how the children are, and how he, himself, is getting along? That person is required by the manager to bring to the establishment a smiling exterior, and even though his troubles at home are greater than those in the factory, nobody is there to say, "Cheer up, everything is going to be all right." But the people in a mercantile establishment, the sales people, are required to stand behind the counter and look pleasant, and jump up and down at the requests of the customers. Of course, it is the policy of the management that the customer must be pleased and when we consider that the lay-out of the mercantile establishment is diametrically opposed to the lay-out of the factory, this question of comfort and good cheer applies with all the more force to mercantile establishments.

In the lay-out of a factory, the primary consideration is pleasantness for employee, an opportunity for the employee to do his work under such conditions as will promote his cheerfulness and increase his productivity. In the lay-out of a mercantile establishment, the primary consideration is that the customer must be pleased, his esthetic sense must be gratified. When he comes into the place everything is considered from the point of view of getting

the man or woman to spend some more money and thereby place a little bit of extra burden on the person employed. Back of where the customer stands, we don't, or the customer doesn't know or doesn't care, how the employee is being treated or what provisions are made for the employee. That is a mental hazard to the employee and from which the factory worker is guarded and shielded.

With special reference to the matter of exits and fire hazards, as outlined in Mr. Tewey's paper, it is well to bear in mind that we have a peculiar problem facing us with respect to this one particular feature. In a factory where fire extinguishers are placed, fire drills have been practiced and there is an efficient organization so that the building can be emptied in a few minutes; every man and person assigned to certain posts is there and the building is emptied very easily because there is an army trained to discipline. What do we have in a mercantile establishment of any considerable size? And that applies to a great extent and more powerfully, to the places where the neighborhood stores have so outgrown their original limits that they have simply added on without regard to the comfort of the employee and without regard to his safety.

In a mercantile establishment, to determine the number of exits, the location of fire escapes, and the assignment of duties in a fire drill, you have got this peculiar difficulty confronting you; the place in itself is primarily one to which shoppers are drawn and how many shoppers there are in any one particular store at any particular time of day in this season of the year, if a fire should occur and the employees stationed at certain points in the fire drill, what guarantee have you that they will not lose that place and will not be able to carry out their assigned duties. You have to remember that you have people from the outside, the patrons, whose first thoughts are of safety and who don't give a rap how the other fellow gets out provided he sees that he gets clear. They block up the passages and prevent the one who is to do the real work in checking the fire, from going out and doing what he is supposed to do and what, in the end, would be the best thing for all concerned.

Those are the things we have to remember, and we have got to remember. All the things that were said in a previous paper, in regard to the development of the labor laws, apply to mercantile establishments to-day as they apply to the factories and I hope it will not take as long for the Legislature of this State—and I know that the Industrial Commission is taking under consideration a new code for mercantile establishments—to formulate rules and laws which will govern the mercantile establishments and assure the safety of the workers in those establishments, both from the point of view of comfort and safety.

MR. GERON: We will now hear from Mr. George W. Davison, Mercantile Inspector, New York City.

MR. GEORGE W. DAVISON: Mr. Chairman, Ladies and Gentlemen: Mr. Tewey, in his paper "Hazards of Mercantile Establishments," mentioned child labor as a vital problem of every mercantile division, and advocated the extension of the jurisdiction of this division to include towns and villages. It is this particular problem, as presented by Mr. Tewey, that I wish to

emphasize in my discussion, and endeavor to support his contention that the present method of enforcement is unsatisfactory in these towns and villages, if, in fact, its enforcement isn't—as I have reason to suspect in most instances—entirely neglected.

Mr. Tewey stated that child labor may be considered a hazard, although possibly not from the viewpoint of the safety engineer. In that particular statement, I disagree with Mr. Tewey to this extent, that, even from the viewpoint of the safety engineer, child labor can be considered a hazard and, under some conditions, a very definite one. By that I mean, in the same sense that a careless workman is considered a hazard, not only to himself, but to those that work with him, or in the same vicinity.

I recall an instance, when I, as a boy of fifteen, might possibly have been considered a hazard, and a very serious one at that. I was employed in a large office located in Lower Manhattan. I had a friend, a few years older than myself, who was learning to become an electrician. This other boy, being much interested in some of the electrical phenomena he had witnessed, passed the word to me I might learn something interesting and edifying if I were to unscrew an electric bulb from a socket and insert my knife blade in this socket. Not having electricity at home, I waited until I reached the office where I was employed and the very next day about eleven o'clock when activities were at full swing, I demonstrated to my own satisfaction and that of another boy in the office what would happen under the above conditions. Incidentally, the entire office force knew something had happened. When I picked myself up from the floor they had to send for the building superintendent to repair the damage; every light in the building on that particular circuit had been blown out. I am not enough of an electrician to know exactly how dangerous my experiment was, and I just cite the incident to illustrate what you may expect from an immature mind of a child at that age. If this electrical friend of mine had been interested in high explosives and I had been employed in some industry that handled T. N. T., for instance, he might have persuaded me to try a really interesting experiment.

You all know that a child likes to get to the inside of a watch to see what makes it tick. I think you can safely consider child labor as a hazard when you couple this tendency with an entire lack of a feeling of personal responsibility. Think of the possibilities for such a child operating a passenger, or in fact any, elevator, which, as Mr. Tewey pointed out, is quite possible under the present law. In fact, on investigating a complaint sometime ago I found the twelve-year-old son of the building superintendent operating a passenger elevator in an apartment building in New York City.

Mr. Tewey also stated, that any child who leaves school before the age of sixteen years to enter industry in any capacity, suffers a distinct loss. In connection with that statement I wish to add that the loss isn't only a personal one, it is a loss to the community at large, one more undeveloped mind thrown on the market.

I would also like to draw attention at this point to the attitude of employers of child labor, yes, and in some instances to that of the judges who hear child labor cases. The great majority of such employers seem to think it is an injustice not to be permitted to employ children who have not filled the requirements covering child labor, so long as they only employ them for a

few hours before or after school. The attitude is that it doesn't hurt them to get up early in the morning. My sister is a public school teacher in New York City, and more or less interested in the operation of the Child Labor Law, because of my connection with this Department. She told me of a boy in her class room last term who was constantly falling asleep. Upon inquiring into the cause she found the boy was arising at five o'clock in the morning every day to deliver milk and rolls for a shop in the neighborhood. This is a practical illustration within my own knowledge. That child's development was being arrested by the lack of sleep those few hours in the morning, and it holds true also for the hours of employment after school. A child can not be expected to have many interests and give proper attention to them all.

Another attitude of the employer toward child labor is this; you find a child illegally employed and approach the employer for an explanation. In eighty per cent of such cases he says it is charity, the boy's people are poor, the boy lives in the neighborhood, his mother begged to have him put to work so as to help out the family purse, and so forth. Upon inquiry you find he is paying the child about a dollar and a half for a week's work after school and all day on Saturday.

Less than two weeks ago, I found a boy of twelve years employed as a bootblack. The employer told me that neither I nor anybody else was going to stop him. He said, "Who is going to support the family of nine?" It seemed the boy's family consisted of eight other brothers and sisters besides the parents. As I had already ascertained from the boy that his salary was seventy-five cents for a twelve-hour day on Saturday, I could have retorted that he, the employer, was certainly not going to be "it" when it came to supporting the nine. Think of it, the boy lived on the outskirts of Brooklyn and the fare to Central Manhattan was twenty cents which left the boy fifty-five cents for a twelve-hour day of hard work.

Another attitude of employers of child labor is this, "Oh, yes, the child labor laws are an excellent thing, we are firm believers in them." They are firm believers only as it applies to the other fellow; they think employment in their own establishments is only play. I am sorry to add, this attitude doesn't end with the child labor question; a great many employers seem to think that all restrictions and requirements covering sanitary conditions and safeguarding employees from accidents, are excellent things but only when applied to the other fellow.

Now, to the question of inadequate supervision of towns and villages. As Mr. Tewey noted, the jurisdiction was only extended to third-class cities during the present year. Prior to last May, jurisdiction in third-class cities had been the same as at present in villages, namely, local health organizations. Shortly after the date mentioned, a number of mercantile inspectors were sent to third-class cities. The conditions they found were astounding. I know, because I was one of them. There was absolutely no check made on child labor or hours of females. Ordinarily the working hours of females were not bad, but both females and children were employed at night after ten o'clock, in many instances after midnight every night. It was a common practice to employ children from eleven years upward, directly after school hours up to midnight. I leave it to you if that is any hour for a child to be going home; also where and when is the school work going to be done?

The sanitary provisions of the law had also been neglected. I will mention one condition. The toilet provision in a great many instances consisted of an open bowl in the cellar where there were no enclosed walls; this condition existed in establishments where males and females were expected to use the same bowl. I also found that foodstuffs were handled in proximity to these bowls.

I could go on at great length to show the lack of enforcement of these laws which appear to have been neglected entirely. If the above conditions were true in cities of the third class, where enforcement had been left to the local health authorities, isn't it fair to assume that the same conditions exist at present in villages? I will go further and make the positive assertion that they do. I visited some of the villages in my travels through the State and can say this from personal observation. I will, therefore, close my discussion in the hope that I have in part, at least, convinced you that child labor is a distinct hazard; that it is unfair to the child and to the State to permit it in any form, or to any degree and that Mr. Tewey's plea for the extension of the jurisdiction of the mercantile division to towns and villages is justified.

MR. GEERON: Mr. John E. Donegan, Mercantile Inspector of New York City, will continue the discussion.

MR. JOHN E. DONEGAN: Mr. Chairman, Ladies and Gentlemen: You sit out there and listen to how little is being done by the employers of mercantile establishments. It puts me in mind of an Irishman who went to take the examination for dog catcher. The first question asked him was "Do you know what the rabies are, and what would you do for them?" Old Pat scratched his head and thought a while and then he wrote: "The rabies is a Jewish Priest, and I won't do a damn thing for him." That is the same position employers of mercantile establishments are up against.

I have heard Mr. Tewey cover the big places, and I notice Mr. Shea is on the program for eleven thirty; it is now eleven forty so I am just going to enumerate a few of the accidents which are liable to occur in small establishments.

There are many mercantile establishments where there is danger to the health of the employees who handle the article sold therein. One of these establishments is the paint supply store, where dangerous dry colors, dry bronzes, and lead and their mixtures, are sold in can and pulverized form. In the process of making a sale these articles must be handled by the bare hand. There is no less danger in the handling of articles sold in these establishments than where they are manufactured. In the manufacturing process, there must be provided hot water, soap, and individual towels as a preventative of industrial poisoning. This danger is not eliminated in the finished article but is carried to the mercantile establishment. Therefore, in my opinion, there should be provided for the employee handling these articles at least preventive measures against occupational poisoning, namely hot water, soap and individual towels, and the wearing of gloves where the employee is required to handle lead, etc., in its different forms.

There is another kind of mercantile establishment where accidents frequently happen, and that is in the wholesale and retail meat market. Employees are daily cutting and smashing their hands in these establish-

ments and there isn't even a first-aid kit provided to help stop the flow of blood, and prevent infection. Any small factory is required to have one of these kits on hand and they have shown good results, but why not these meat markets?

Another danger found by inspectors of this division is the frequent use of trap doors in small mercantile establishments. These doors may be found in almost any location, but in most cases are situated at the rear of the establishment and are generally found where there is no light. When the door is open there is no rail or gate provided and many times you find that both ends of this trap are opened, giving a double danger of the employee falling down into the basement below.

Another danger is in the use of swivel ladders, which are found in many cases broken and in a very bad condition. The rail that these ladders run on is also found to be very poorly fastened to the wall or shelves for which they are used. Where the ladders are not used, the employees are allowed to climb upon any old box or chair which may, or may not, be strong enough to hold them.

Again, you encounter establishments which have a very high ceiling and you will find a small balcony running around the entire store where employees are required to walk to take and place stock on shelves situated upon this balcony. The width of these balconies are, in most cases, not over two feet and have a small rail which is rarely over three feet high, leaving a possibility for the employee in reaching up to the shelves to lose his balance and fall.

These are only a few of the many cases that can be enumerated where accidents may occur in mercantile establishments and, perhaps, with the papers read by the other inspectors, they may awaken the public to the fact that even in mercantile establishments the public, as well as the employee, are always in danger of some unforeseen accident happening which may only be small, but then again it may be a very great one.

I hope that our efforts in trying to briefly outline these dangers will not be in vain, and that all possible speed may be enacted to draft the code covering mercantile establishments which will help this division of the Industrial Commission to further protect the working people in this State as well as the public in general.

MR. GERON: We will now have the paper on the "Development of Safety Work in Factories," by Mr. Patrick Shea.

DEVELOPMENT OF SAFETY WORK IN FACTORIES

BY PATRICK SHEA, FACTORY INSPECTOR, NEW YORK STATE INDUSTRIAL COMMISSION

Before discussing the question of safety in factories, I think it would be well to consider the discussion of safety in Safety Congresses. One of the speakers this morning has spoken about the mental hazards of mercantile establishments. Does anybody realize the mental hazards in Safety Congresses?

I have been called upon to prepare a paper on the development of safety work in factories, and I thought I had done a pretty good job and I was

proud of it. I have heard college men, and foremen, and superintendents, and proprietors, and commissioners, and factory inspectors, and everybody that came along took a whack at my subject until what I have got left to hand you looks like a dish of boarding-house hash. So, I think something should be done to take care of, to protect from danger the pride of a fellow who is called upon to read a paper at Safety Congresses. I hope it will be attended to in the future.

In considering this question, it would be well to consider briefly the development of the factory.

In the days of our grandfathers, the home was its own factory. There the flax was spun and woven; there the wool was carded, spun and woven; there the cloth was shrunk and dyed and from the cloth and linen were fashioned garments for the members of the household and supplies for their bed chambers. The mechanic who did work requiring exceptional skill conducted his own shop in which were employed himself, such members of his family as were suited to the work and an occasional apprentice bound over for a term of years, whose reward for unlimited hours of arduous labor was his food, such as it was, and instructions in the technic of the trade. The parent furnished his clothing, the mechanic received a sum of money for teaching the apprentice and also had the profits from his labor. That gave the mechanic an idea. There was a man he knew who was not steadily employed because a poor business man, although a good artisan, while he himself had more work than he, his sons and his apprentice could attend to. Why not hire the man at a nominal wage and profit from his labor, also? He acted on the idea and thus the first factory had birth.

In the course of time many such factories sprang up. Then two or more small proprietors combined and formed larger and more powerful business organizations. Competition became keen, production was speeded up to the limit, while the cost was kept as low as possible, the aim being to produce an article that could be sold, at a profit, cheaper than a competitor could sell it. Then the team work system within the shop was developed. Later the shop contractor appeared on the scene, who agreed to make an article complete for a stated sum, the proprietor furnishing the material, the contractor, the labor. Every idea that promised more profitable results was tested.

The inventor then entered the field and machines were built that made things much faster than they could be made by hand. They were improved in the course of time, that is, they were made to run faster and turn out more goods, until they became such a success that nothing was made by hand that a machine could be invented to make.

Then factories devoted to the building of machines for sale sprang up, where economy and production were the watchwords and profit the aim. If safety was ever thought of, it could not be considered and was not, with the result that things were made by the thousand where they were formerly made by the hundred, and men, women and children were being killed by the hundred and maimed by the thousand where few or none were killed or maimed before.

At first factories were housed in attics, spare bedrooms, the woodshed or the hayloft, later in abandoned dwelling-houses. As they grew in size the

buildings were enlarged. Then new buildings were erected, but as the capital was limited, so was the size of the buildings, utility alone being considered — safety, never. One stairs was enough to let the help in. That was important, but it did not matter so much how they were to get out. It was important also to get the goods in and out and the stairway was inconvenient, so holes were cut in the floors and goods were hoisted in and out through them. To rail off those openings would require time and lumber and when hoisting had to be done the railings would have to be removed. Why a railing then? Nobody but a fool would back into or walk into those holes. Later, elevators were placed there and still later the elevators were operated by power. If there were any machines more dangerous than those harmless looking elevators, we have not heard of them.

During this time there were men and women of vision who thought of things other than production and profit. They thought of the health, comfort and safety of human beings who earned their bread in factories. They protested against the needless hardships to which they and their fellows were subjected. They demanded for themselves and their fellows protection against needless injury and death. They were denounced as demagogues or laughed at as harmless idealists, but they were not discouraged. They formed organizations and through them appealed to the legislatures for laws that would compel the factory owners to give them relief, since appeals to their sense of justice were ignored, and after considerable urging some laws were enacted. They were soon to learn, however, that laws unenforced are little better than no laws at all, so they went to the legislatures again and asked for agencies to enforce the laws. Some of the legislators said to them, "You came to us and asked us to pass laws for you and we did, now you want something more. Will you ever be satisfied?" To which they replied, "There was a safety law in existence before you passed your laws, but because there was no one to enforce it, it did not protect us. It was written not in this State nor in this country nor in this age nor in a language that we understand, but condensed and translated into English, it reads, 'Thou shalt not kill,' which is violated not by taking of life alone but by every willful act or omission that injures or threatens to injure the body of any son or daughter of Eve. Do you believe that your laws have a better chance of success without any one to enforce them than that law had?"

The legislature of New York State, seeing the force of the argument, created a Bureau of Factory Inspection. That bureau was not long in existence before it learned that the laws it was created to enforce were ambiguous and not applicable to some of the worst conditions in the factories. It also learned that if it was to be of any real service, its powers would have to be enlarged and its force increased. While doing what it could under the circumstances, it joined forces with those other organizations in an effort to have the laws amended and extended so that they would reach the menacing conditions in factories and to have its own powers and numbers increased in order that it might be able to apply them. As a result of their joint efforts we have the Labor Law and Industrial Code and the State Department of Labor.

To trace the development of the safety movement in the factories of this State would be to review the work of the Department of Labor from the creation of the Factory Inspection Bureau to the present time. That would

require much more time than we have at our disposal to-day. At best we can only touch upon some of the outstanding features of the work.

Buildings that were structurally unsafe, and many such were found, have been made safe by orders ranging from the replacing of a worn stair tread, a rotten post or a worn floor to the complete reconstruction of the building. Elevated runways that were without railings are now railed to a height of 3 feet 6 inches, elevated platforms that were without railings, or had railings so low that they constituted a menace, are now properly railed. Elevator shafts have been guarded by railings; inclosures 6 feet high with gates high enough to prevent persons putting their heads in over them and getting struck by the cars, or by fireproof inclosures from cellar to roof with fire doors and contact devices according to the requirements of the law and code. Recesses have been filled in, projecting ledges have been beveled, cars have been inclosed at sides and tops, safeties have been provided under them, locking devices placed on them, overhead sheaves have been guarded, the cars and entrances to the hoistway have been lighted, monthly inspections are being made of all the elevator parts and the use of unsafe elevators has been discontinued and new ones substituted.

Very few buildings had exit facilities adequate for the number of persons employed in case of fire and very little precaution was taken to prevent fires. These conditions have been remedied so far as the law permitted by requiring additional exits where needed and correcting faults in existing exits. Doors that were locked, and the practice was common, to protect the goods of the proprietor have been unlocked to protect the lives of his employees, and where they opened inwardly they have been made to open outwardly. Smoking in factories, a common practice, has been eliminated and inflammable waste and rubbish that was allowed to remain where it fell until the week-end clean up is now removed from the floor twice a day or oftener, if necessary. Handrails have been placed on all stairs; and halls and stairways that were dark because it was considered a waste of fuel to light them are now lighted. Open gas jets in halls and workrooms are screened to prevent inflammable material from coming in contact with them. Fire alarms have been installed and fire drills have been organized and are maintained where the law requires them. In many cases sprinklers have been installed in lieu of them. At one time when an inspector heard an alarm of fire in his district he hoped for the best. To-day he counts the strokes with reasonable assurance.

These results were secured by persistent effort in the face of unreasonable and unyielding opposition, based primarily on the cost and secondly on the blindness of the owner who could not see the danger because he "never had a fire in his factory."

There is another element with which the inspector has had to contend and if not quite as formidable it has often been more exasperating than the opposition of the proprietor. It emanates from the man, who, holding a more or less responsible position, never misses a chance to show his loyalty to his boss and concern for his interests. He objects to every proposal, no matter how meritorious, unless it gives promise of tangible profit, and does not interfere with his "making good on the job."

How the attitude of such people change when an improvement is made with the approval of the boss is illustrated by an incident recently brought to our

attention. There is a building in which from twelve hundred to two thousand people are employed and which has at present two very fine exterior fireproof stairways, installed, by the liberal concern that owns the building, on orders from the Department of Labor. Before these stairs were erected, there was in the building one interior fireproof enclosed stairway of limited dimensions and a fire escape of the old type, which were considered ample by those directly in charge of the building. Recently a member of the Industrial Commission on a tour of inspection, accompanied by the supervising inspector of the district, visited among others this building. The supervising inspector, after introducing the Commissioner and himself, informed the man in charge that they wanted to see the exits and started for the old stairway first. The man stopped them and said with a frown, "We don't call that an exit" and with pardonable pride led them to the new stairways that were considered unnecessary a few years ago.

The Laws of 1913 made ample provision for safety in buildings erected for factory purposes after that time, but some architects, ignoring these provisions, substituted their own ideas for them. The Department invites all who contemplate the erection of new buildings or the material alteration of old ones to submit the plans for inspection. When that is done, all necessary corrections are made before the work is begun. When it is not done, it becomes necessary to issue corrective orders after the building is completed and the factory or factories are in operation, the resultant expense being much greater than if the building had been planned and erected in accordance with the provisions of the law.

When a manufacturer built a machine for sale, he tried for as many selling points as possible. He wanted his salesmen to be able to show how much work it would turn out, how easily it could be operated, how easily it could be adjusted for different kinds of work, how easily and readily it could be taken down, when necessary, and how much cheaper it was than other machines for the same kind of work.

As a result we had machines coming into the factories with set screws sticking out all over them, gears and sprockets exposed, balance wheels and fly wheels with spokes flying past projecting parts of the machines, shaftings in connection with machines located where the operator had to constantly come in contact with them were uncovered and no attempt was made to guard the danger points where machines were fed.

In the factory, shafting was hung so that it would stay up and run; the millwright knew no danger. Machines were set up so that they would run and keep running. Handling and dodging belts became an accomplishment. Such were the conditions when the factory inspector went to work. To-day protruding set screws in revolving shafting and revolving parts of machines have practically disappeared. Gears are covered wherever safety requires it. Shafting near floors and working levels is guarded. The old style shaft coupling with projecting bolt heads and bolt points is fast being replaced by the flange coupling and those that are left are covered. Belts and pulleys are guarded and where practicable machines are equipped with loose pulleys and belt shifters. Guards have been invented and applied to all dangerous machines or parts of machines and they have been made as safe as it is possible to make safe something that was conceived where safety was forgotten or unknown.

An idea of the magnitude of the work performed by the Department of Labor may be had from the fact that during the last fiscal year 59,732 accident prevention orders were issued and 56,379 compliances were secured. When it is remembered that in many instances an order covered many machines, it can be seen how many danger spots were guarded in that year alone.

Some time ago the Department instructed its inspectors to report the names and addresses of the makers of all new machines found in factories in their districts that were not properly guarded by the maker. It communicated with such concerns informing them that the machine sold by them did not conform to the laws of the State and to their credit be it said that nearly every one of them expressed the desire to conform in every respect and thanked the Department for its interest in the matter. Now, nearly all such machines, whether made within or outside the State are guarded where made so far as danger points on the machine itself are concerned.

From the beginning the inspector had many problems to solve, many obstacles to surmount and many impediments to overcome. He had to discover the danger points and establish to the satisfaction of those concerned that they were dangerous. Then he had to show how to guard against the dangers, if possible, in a manner to meet the objections of the boss and the employees and, where necessary, to compel the boss to provide guards and the employee to use them. The employers opposed him because of the initial cost, the cost of maintenance, and the loss from lessened production and on the further grounds that guards would not be used if provided and were not necessary if men would be careful, because all accidents are the result of carelessness.

The inspector acknowledged that some accidents result from carelessness or recklessness, either of the injured person or his fellow employees, but, he interposed, the employee has no control over his fellows and if he happens to be born reckless, he has very little control over himself. The employer is the only one who has. Most accidents, however, are not the result of carelessness or recklessness, but happen because men are human beings and not machines. Many causes could be cited to which the employee in no way contributes, as when they are operating some dangerous machine or working in some dangerous situation that requires their undivided attention, they are momentarily attracted by something that happens about them or because of fatigue they fail to keep up with the motion of the machine or they trip or stumble and injury results.

In any case it is good business economy to take all necessary precautions to guard from injury the skilled employees who know the work and avoid the cost and annoyance of training new ones. If that does not appeal to the employers, then the state informs them that if they want its protection for their business they must protect its citizens while engaged in their business. The employees will use the guards if the boss insists and the question of production is simply one of training. In a very short time the employees will learn to operate the guarded machines as fast or faster than they did the unguarded ones.

When the inspector finally convinced the employers that guards would have to be provided, some have made or purchased the best guards that their own

judgment and the inspector's experience could suggest, while others, as if to give concrete expression to their contempt for the law and its sponsors have provided makeshifts that created additional hazards without guarding the points intended to be guarded. In these cases the inspector was forced to use the red tag or go to the courts in order to secure proper compliances. The inspector was very often compelled against his will to go to court and while his treatment by judges has been generally good and encouraging, there have been times when he, appearing as plaintiff, has found himself in the position of defendant with the judge as accuser and prosecutor.

Opposition from the employer was to be expected, but the average inspector did not expect opposition from the employee, who through his organization was largely responsible for the protective laws. When it was encountered, as it occasionally was, it was discouraging. The attitude of some employees was that they had learned to handle belts without shifters and to run machines without guards. Since they did not have them while learning, why bother with them now? The learner did not want them because he wished to become as accomplished as 'his hero,' the experienced man. There was also the human trait that will not be denied which prompts people to take needless risks for the pleasure of it. By the exercise of tact and appealing to their better judgment and occasionally by personal notice that prosecution would follow future failure to use guards, most of that opposition has been eliminated.

As the question of proper factory lighting as a preventive of accidents and eye impairment and the question of exhaust systems and other accessories as means of preventing disease are to be fully treated in special papers, we will not discuss them here.

The employment of reckless or irresponsible persons to operate dangerous machinery or to do other dangerous work or the failure to properly instruct new employees before putting them to work has been the cause of many accidents. Some employers, recognizing the fact, are very particular when hiring persons for such places and about their training but too many ignore the matter, hire the first person available and put him to work without any warning of the dangers, leaving him to learn of them at a cost to himself and often to his fellows that cannot be estimated in dollars. The state prohibits the employment of children at such occupations and while the practice is nearly wiped out, some children are still found at work. Children anxious to go to work and knowing that they cannot get work at such places unless they are sixteen years of age, when applying for a job say they are sixteen and are put to work and remain at work during the hours allowed by law for minors instead of the limited hours for children. When the fault is discovered by an inspector or through some serious injury to the child, the employer offers as an excuse, "He told me he was over sixteen," when anyone with ordinary judgment would know that he was not.

Fatigue has long been recognized as a contributing cause of accident. The state now protects those regarded as most susceptible to its influence,—women, minors and children, by limiting their daily hours and to a lesser degree all workers, by the day of rest law through which they are guaranteed a weekly rest of twenty-four hours for mental and physical relaxation.

Where the work is exceptionally laborious, the temperature very high or the pace very fast, in addition to limiting the working hours, the employer

has found it necessary to permit short rest periods in order to avoid complete collapse and many employers, where the work is not so trying or laborious have adopted the plan and have found that it works to their own as well as their employees' advantage.

There is yet much that can be done to further the progress of safety. Buildings, elevators and hoistways, the cause of so many serious accidents, can be more completely guarded and all elevators should be in charge of an operator. Exits from a building should be explained to all persons in the building and where large numbers are employed, fire alarms should be installed and fire drills maintained. When horizontal exits or enclosed stairs are provided, manual as well as mechanical closing of fire doors should be provided for. In many instances machines are set up dangerously close to each other or to walls or posts. Where possible that should be remedied and should not be permitted in the future. Much improvement is possible in the guards that are provided for machines in many factories and very much improvement in shop practices. Employees should be advised, encouraged, induced or, when necessary, required to use machine guards and other appliances that are provided for their safety. As all buildings now being erected are planned with safety as one of the underlying motives, so should be all machines. It would be much better to make safety a constituent part of the idea on which a machine is based than to attempt to provide it after the machine is completed. While the inspector has encountered much opposition in the performance of his work, it is a duty as well as a pleasure to make acknowledgment of the assistance and encouragement he has received from many sources. There are and always have been employers whose first consideration has been the safety and comfort of their employees. So far as the successful conduct of their business in the face of keen competition and the information at their disposal would permit, they have made their factories safe places in which to work. When an order is issued in these factories, the inspector is not asked, "What is the least that will be accepted under the law?", but "What in your opinion is the best thing to do under the circumstances?" To inspect such factories is a pleasure. In many factories the inspector meets men of skill, often approaching genius, who are not too wise to seek advice nor too self-centered to give it. They plan and make guards that are a credit to them and the value of the advice which they freely give to the inspector is not easily estimated.

The safety engineer, like the factory inspector, expects no thanks for the work he is doing. Credit for the good he is accomplishing he is entitled to, however, and the factory inspector cheerfully gives it to him.

With the exception of a few large concerns that have found it to their advantage to employ trained men to look after the health, comfort and safety of their employees, there is no one to intelligently attend to that work in the factories of the state which now number sixty-seven thousand except the state factory inspectors. Because of the training they have received from and through their superiors and what they have learned in the best of all schools, the school of experience, where they have had opportunity to observe the best and the worst, they feel that they are better able to perform that work than any other agency that might attempt it. They earnestly appeal for the cooperation of all who are interested in the movement, particularly the employers and the employees in the factories to the end that the places where so many of their waking hours are spent may be made safe and pleasant.

DISCUSSION

MR. GERNON: We will now hear from Mr. George B. Runyan, Factory Inspector, Auburn.

MR. GEORGE B. RUNYAN: Mr. Chairman, Ladies and Gentlemen: I am not going to attempt to elaborate on Mr. Shea's paper, but there is one thing I would like to bring out in connection with this safety movement that I think has been somewhat disregarded. We have been led to believe, by some of these safety engineers, and men of practical experience, that so far as the success of the safety movement was concerned, the foreman was the last enemy to be converted. I can't take that view. I haven't seen a factory yet, where the superintendent didn't exercise the most influence, and I feel that the superintendents must be brought over to safety.

We heard from a man yesterday who introduced his remarks, I felt, by taking a slam at the inspectors; referred to them as small people with a big head. I think we have got to win that type of factory superintendent over to our side. I think we have got to bring them to see that the factory inspector is a man, and has a definite message of safety, and he isn't a small individual with putty for a brain, and still more unfortunate, no place to carry more brains.

MR. GERNON: We will now hear from Mr. C. G. Branch, Factory Inspector, Buffalo.

MR. C. G. BRANCH: Mr. Chairman, Ladies and Gentlemen: In passing down the street the other day, I noted a sign in front of a bakery which stated "Bread"; suspended underneath was still another sign, "Food for Thought." In connection with Mr. Shea's paper, his excellent paper, there is a great deal of food for thought.

The development of factory safety work has been gradual but progressive. If we were able to throw on the screen a picture of a factory workroom of today, and one of that same factory ten years ago, you would quickly note that development. You would see the unguarded saw, the exposed gears, the dangerous shafting, and the open well hole protected by an inadequate guard. While in a factory a few days ago I asked an employee if a guard placed so and so on the machine would interfere with its operation. He said it wouldn't, and added further, that he believed in safeguards. That to me, although not an especially interesting statement, was a positive proof that we are sowing the seeds of safety.

Since the re-enactment of laws relative to exits in factory buildings in 1913, there has been remarkably progressive development of fire safety in such buildings. But few persons outside of the Commission fully realize the magnitude of these changes so that today these same buildings, which were in existence in 1913, have been made reasonably safe. True, thousands of dollars have been spent by the owners of factory buildings to create in their buildings a safe condition, and much credit must be given to them for this work.

In these buildings the enclosed stairway, the inadequate and unsafe fire escape, the workroom exits, the door opening into the dark hallway and often the locked door, have given place to a reasonably safe means of egress. Fires do occur in factory buildings and when they do occur, we now have a deep

feeling of gratitude for such development of safety conditions that will permit all persons in the building to reach the street in safety. May history never repeat itself in the factory fires in New York State.

No small part of the inspector's time is spent in the development of safety work in the small factories of this State wherein ten persons or less are employed. Of the sixty-seven thousand odd factories in this State, by far the greater majority of them have ten or less employees. It is in these smaller factories that the inspector encounters the greatest difficulty in development as the person responsible is usually proprietor, manager, foreman, and office worker. He has a hundred and one things to look after; a weekly payroll to meet, and all those things. He agrees with your statement, he promises to comply with your recommendation and in his heart he fully intends to do so, but this, added to his other duties and burdens makes him oftentimes neglect and sometimes forget his promise to comply until the inspector is forced to use strict means to conserve life and limb of the employees, the most valuable asset of his factory.

However, the development of safety work in the small factory, with perhaps few exceptions of those just recently starting, has been most gratifying. By constant inspection by the Commission the proprietor has assimilated not a few general ideas of safety, sanitation, and good housekeeping, the germ of which may have been founded in fear or compulsion and has now grown into a feeling of responsibility for the health, safety, and welfare for the worker under his roof.

The other day I visited a new factory just starting in operation, and recommended to the proprietor that he place certain guards to properly guard the belt and pulleys. I started to explain to him how these guards might be made; interrupting me he said, "I know how to make and place those guards, formerly I was with so-and-so, (a prominent manufacturer of the city) and while there I made many of their guards." Now this at least, to me, proves that our labors in the development of the safety work in factories are bringing forth fruits for the morrow.

MR. GERON: The next speaker is Mr. John N. McDowell, Factory Inspector, Albany.

MR. JOHN N. MCDOWELL: Mr. Chairman, Ladies and Gentlemen: Mr. Shea's comment on the former papers conflicting with his story, reminds me of a little story. There were two men who had been warm friends all their lives, one of them, by the way, was named Patrick. He gave up all thought of religion and any thought of a hereafter. He finally died and Mike was called in to be chief mourner; they noticed him sitting on a chair with his hand to his eyes, his shoulders shaking. Everybody imagined he was weeping, but one of them looked him over and saw that he was laughing, so he went over to him and told him he ought to be ashamed of himself, that he should be crying in place of laughing. Mike looked up and said, "I don't know, I don't think so, when I think of poor Pat lying there all dressed up and no where to go."

Mr. Shea speaks of the necessity of providing regular operators on elevators. It is my opinion that a power elevator, no matter how well guarded, isn't safe unless a regular operator is provided. Many instances could be cited where serious accidents, most of them resulting in death, would not

have occurred if there had been regular operators on the cars. In one instance a man, after starting the car, fainted and fell in such a manner that his head and part of his body projected beyond the edge of the platform. When the car reached the top his head was cut off and fell into the cellar. In another instance, a boy, starting an elevator, tried to get on, was caught by the closing gate and was held there until the elevator reached the floor where he was crushed between the car and the sill. The floor of the car had to be cut to release him, and he died in a few hours. Upon investigation it was found he was hired under the age of seventeen, but was really only fifteen.

Recently a boy of fifteen years of age was caught, while attempting to get on a moving car, between the gate and the sill. I don't know whether this boy is alive or not. In any event, if the boy lives, he will be maimed for life. All of these accidents could have been avoided if there had been a regular operator on the car.

While all the papers read at this Congress have been splendid, they have been of a general character, little, if any, specific mention has been made of the special requirements for the necessities for the safety and comfort of women in factories. One of these is that requiring seats with proper backs for their use. Most of the employers of women in large number give special attention to this matter, but, the smaller employers are inclined to ignore and try to evade providing such seats.

Recently an inspector reached a factory where some women were employed. It was early in the afternoon, the work was not laborious, yet the women appeared to be exhausted. In looking for the cause he noted they were seated on stools without backs with their bodies bent forward. He assumed that this was the trouble and issued an order for proper seats with backs. The proprietor appealed from the order on the ground that no such seats could be procured. The Department informed him that they could, and would have to be procured at once. On the occasion of the next visit of the inspector, he found the order complied with and the women expressed their thanks for what they called great relief.

MR. GERNON: In connection with the point brought out by Mr. McDowell about seats for women, or for any one that is seated at an operation, permit me to state—and this statement the inspectors know to be true—that it is safe to say there isn't ten per cent seated at their work who are seated properly or efficiently. Consequently the proprietor loses production, and the health of the operators is more or less injured.

Mr. Bellhouse is here from England and we will be glad to hear from him at this time.

REMARKS

BY GERALD BELLHOUSE, DEPUTY CHIEF INSPECTOR OF FACTORIES, HOME OFFICE, LONDON, ENGLAND

Mr. Chairman, Ladies and Gentleman: I am sure we have all listened with great appreciation and interest to the admirable paper which Mr. Shea presented, and for the subsequent discussion. There are one or two points that Mr. Shea spoke on which interested me and so I asked your Chairman to have an opportunity to put before the meeting these several points.

The first point, I think, is that he brings out that human nature, after all, is pretty much the same the world over and inspectors over here seem to me have just the same sort of troubles and difficulties — not only with employers but operators — when they visit the factories.

But, to return to more important matters. Mr. Shea said that the inspector has got to know and to understand exactly where all the points of danger are, in connection with machinery. That is a very true statement and one which I think needs some little elaboration, if he is going to be properly informed of all the dangers. It seems to me that there must be a very close analysis of the accident reports.

Now, we have found on our side, I don't know to what extent, I am sorry that Mr. Shea didn't have an hour instead of half an hour, in which case he would have told us a good deal more. I am not familiar with the way your splendid reports are analyzed over here, but we have found in some of the more important trades, it is desirable not only to analyze the accident, to say what machine accidents were caused, but it is highly important to get down to the actual point, or the different points of danger on each machine and to show the amount of danger which is to be attached to each.

We had an extremely good example of that. For many years we have kept a very close accident report of the cotton mills. A summary of those accidents spread out over a number of years showed precisely what parts of the machinery were causing the accidents, and it gave a clear guide as to what sort of guards were to be provided. Having got that far, we called together representatives of the employers and operators in the trade itself, a very highly organized trade in England, and we were able to get really representative people to come to these conferences. We put our figures before them and we said that we wanted to come to a general understanding with them as to the machinery in the cotton trade. Our law was a little weak, it provided that all dangerous parts of machinery must be protected, but it didn't say what is to be regarded as dangerous machines, and, therefore, we had found it desirable to come to a clearer understanding as to the parts of machines in the cotton trade which were rightly to be interpreted as being dangerous. There can be no final conclusion, the court is the only place to go, but it strengthens our hands enormously if we can go to the court and say, "This question has been discussed with representatives and employers in the trade and they have all agreed that this is a dangerous part of the machine. This particular firm declined, or neglected, to fence the machinery and therefore we have brought them before the court."

Well, as a result of this meeting of the cotton trade, we did come into a most valuable and far reaching agreement as to fencing that must be provided in the cotton industry. We have done the same in other industries, but I was largely responsible for the cotton trade, being an inspector of that trade.

What has been the result? We have standardized the machine for the cotton industry, it has been a subject we discussed on several occasions here this week, and in which we were obviously all in complete agreement.

It has two very definite results. First of all it insures, I think, that the maker of the machine will attach the necessary guards when it is built, because, if we have a clear cut decision as to the sort of guard that is to be

provided, the employer says when he orders the machine that he wants it guarded in that way. So, you get what you desire, and you get your machines fenced at the time of manufacture, which is the only really satisfactory way of guarding machines. Then, it also—I don't know whether you suffer in this country from the lack of it or not—secures uniformity of inspection by the inspectors in different parts of the country. We sometimes have complaints that every time a new inspector goes to the factory he requires something different. There is some truth in a criticism of that kind, you can't get rid of the individuality of the inspector, and, therefore, it does seem to me that if you can standardize your fencing you do secure uniformity of practice throughout the country, or the State, as the case may be.

Now, there is only one other point I would like to say just a word on. Mr. Shea told us of the progress one might look for in the future, and I have no doubt if he had had more time he would have told us a little more as to the progress than can still be made in the shafting guards. I have in mind the development of what I would like to call the automatic guard, that is to say, an automatic guard would include the trip guard which you will find on the calender rolls in rubber factories, which immediately throws the guard out of action before an accident can occur and develop serious results. It would also include those guards which are very highly developed in the cotton trade by which the machine must be protected, must be covered, before the machine can be put in operation, as on the interlocking type of guard.

I have often felt, myself, no guard of that kind has yet been attempted, but it would be a good idea. Any little hint that I may in this way make, which will stir up the wonderful inventive genius which you have over here in the United States, I hope will encourage the development of protection along those lines.

MR. GERNO: The point Mr. Bellhouse brings out is practically the one that is employed in some establishments here. It may be we don't go into it as fully as they do in England, but the codes are made by representatives of the workers and by employers, and subsequently they make such changes as are desirable.

It was the inspectors who brought out very clearly, some years ago, the thought of safe practices in industry. We never can eliminate all of the accidents in industry, but we have done far too little in this country, and I might say in any country. The hammer is the commonest tool used, and it is safe to say, that seventy-five per cent of the people who use it don't know the scientific and practical way to use it. To illustrate this I might relate a story and it answers part of Mr. Bellhouse's question relative to the reports of accidents.

In looking over the accident reports of certain factories, it developed that a large number of people were injured; they had a great many accidents reporting to the first aid room, and it also developed that they were injuries caused by a screw driver. That was called to my attention and I immediately thought I knew the reason. I sent one of the men whom I thought would be interested enough to go through the question thoroughly, and I advised him to examine all the screw drivers he could find in used in the plant. He found that, which happens commonly in industry, the average mechanic doesn't know how to keep a screw driver point in condition to prevent it from slipping and

causing these injuries. That is an illustration of what can be developed by safe practices. The only kind of an inspection to make is by analyzing the accidents in industry. We find in doing this, that as industries change, as processes change, as new machinery comes in, we have new points at which accidents and hazards develop. I can go into factories that I inspected at one time as an inspector, and if I go into them today, I find that while they are making the same line of goods, there may be little difference in the patent, but the difference in the process is so marked that I would never recognize it as the plant that I formerly inspected.

We have these conditions in industry, and as has been very aptly pointed out, the safety campaign will go on forever and the longer it goes on, the more intelligence we apply to it, the greater results we can accomplish. It is unfortunate for any inspection force, whether it is in this State, or any other State, that we can't measure what we prevent, we can only measure this year with last year. But all of these laws and all of this work surely prevents many fatalities and a large number of injuries.

I have a letter here that I wish to read into the record, and this afternoon I have a very interesting letter which will be read when we take up one of the other papers. It gives a new thought, at least it gives a new thought to me, on a subject that I thought I knew something about, and yet I never thought of it just as this man who attended the Congress thought of it. He had to leave, but he left his letter.

This letter which I wish to read into the record is addressed to Mr. John P. Leo, who is Chairman of the Board of Standards and Appeals in New York.

Dear Mr. Leo: My attention has been drawn to a call issued for a "Safety Congress", to be held at Syracuse, New York, on December 1, 2, 3, and 4, 1919, and to the proposed discussions at the sessions of this Congress of the best methods of bringing about greater safety for industrial workers in the mills and factories throughout the city and State.

I wish you would arrange the work of your Board so that it will be possible for you to attend this Congress, as I believe it is incumbent upon us to be foremost in each and every movement leading to better protection for our workers; and I am confident that practical men, who are to be the delegates, are best fitted not only to point out the dangers that exist or may arise, but are also competent to suggest and plan for necessary improved methods of protection.

Very truly yours,

JOHN F. HYLAN,

Mayor of New York City.

It is now a quarter to one, we are fifteen minutes behind the time, but I think if anybody chooses to discuss these papers now, he may do so.

If no one wishes to discuss the papers we will adjourn.

THURSDAY AFTERNOON, DECEMBER 4

INSPECTOR'S DAY

PRESIDING OFFICER: JAMES L. GERNON, FIRST DEPUTY COMMISSIONER, NEW YORK STATE INDUSTRIAL COMMISSION

MR. GERNON: In beginning the afternoon program the first paper is the "Development in the Removal of Dust, Fumes and Gases," by Mr. Robert Northrup.

DEVELOPMENT IN THE REMOVAL OF DUST, FUMES AND GASES

BY ROBERT NORTHRUP, DIVISION OF INDUSTRIAL HYGIENE, NEW YORK STATE INDUSTRIAL COMMISSION

In studying the history of the enactment of factory laws, which have for their purpose the safety and conservation of the public health, it invariably becomes evident that the inclusion of certain provisions into the law is the result of years of previous ill health or loss of life. These sorrowful results are brought to the public's attention by some particular tragedy or well founded complaint. Then only does the citizenship of a community rise and remedy the condition.

This seems true of the removal of dust, fumes and gases created at various machines or processes in factories. Up to a short time ago no successful attempt had been made in the law, to cope with the condition. It is not within the scope of this paper to enter into the pathological aspect of the subject. The immediate data is simply given to substantiate conclusions or recommendations that may appear later.

As time passes, the history and diagnosis of industrial diseases are adding testimony against dust, gases and fumes which have entered the human body. Industrial dust, fumes and gases have a dual character,—that which enters the system and acts as a virulent poison to the blood and tissues, such as lead, arsenic, mercury, carbon monoxide and phosphorus; or that which enters through the respiratory organs and acts as a chronic irritant to the throat and lungs. Many times, after instruction by the physicians of this division, I have looked into the throat of a worker in a dusty trade, and have noted the angry red color of the pharynx which denotes a constant mechanical irritation. Dust may have a cutting, irritant or obstructive effect on the pulmonary system.

In the U. S. Department of Labor, Bureau of Statistics, Bulletin No. 231, issue of June, 1918, there appears a table of comparative occupation mortality from exposure to dust. This table covers the years 1900 to 1902 in England and Wales. A copy of the salient features as applying to the subject under discussion is given you herewith.

PHTHISIS AND DISEASES OF THE RESPIRATORY SYSTEM

Occupation	Mortality figure	Ratio
Agriculturist	171	100
Carpenter or joiner	276	161
Wool and worsted worker	320	187
Miller of grains	331	194
Carpet, rug or belt worker	359	210
Chemical worker	415	243
Cotton worker	422	247
Zinc worker	456	267
Lead worker	474	277
Brass and bronze worker	500	292
Iron and steel worker	503	294
Glass worker	551	322
Brush, broom, hair or bristle worker	609	356
File maker	712	416
Potter or earthenware worker	758	443
Cutler, scissors maker	848	496

The first factory law in New York State was placed on the statute books in 1886. Three years later, in 1889, appears for the first time the sentence — "Exhaust fans shall be provided for the purpose of carrying dust from emery wheels, grindstones and dust creating machinery."

It is significant that three years later in 1892, this sentence reads, — "Exhaust fans of sufficient power shall be provided for the purpose of carrying off dust from emery wheels, grindstones and dust creating machinery." Significant, since it proves that at once the necessity of supervision over volumes of air, air velocities and fan capacities, was felt. Except for sundry additional phrasings of the original sentence, no real, forceful change was made until May 15, 1915, when the industrial code rules and specifications became effective. Note that this is 26 years after the original sentence is found in the law.

During this period it is an undeniable fact that many manufacturers have wasted their money on inefficient exhaust construction both on their own initiative and through orders from public departments. The condition has been fostered through the lack of fan engineering knowledge of the employer, public officials and the average suction pipe manufacturer.

On May 8, 1919, seventeen exhaust systems used in polishing, buffing and grinding metal were tested. Two were up to the standard; four were fair; six were poor and five very bad. A total average static suction of $\frac{7}{8}$ of an inch was found, whereas the code standard is 2 inches. The examination consisted of static suction tests in the branches, at the tail end, and at the head of the system; observation of the face and clothes of the operator as to dust; also the fixtures, floor and walls of the workroom; the condition of piping and hoods; and the construction of the hoods in relation to catching refuse from the wheels. It was found that a certain amount of the inefficiency was due to the lack of proper maintenance of the systems. Even a new system will soon fail in successful operation if it is not kept in good repair and "tuned up" frequently so to speak.

Since this investigation, many other systems have been tested in the course of our work, and perhaps with a desire to find better conditions; the data from these tests show a slightly higher standard than the foregoing. Up to about 1912 the factory inspector placed orders to remove dust, fumes and

gases written in such form as his ability and experience dictated. Then, as I recall, a somewhat stereotyped form of wording was given us. In 1912 also, there were compiled in the Department what are at present, with slight changes, the specifications that constitute the present industrial code rules on the subject. It is important to note at this point that these rules stated, "Plans showing the proposed construction *may* be submitted for examination and approval with the Bureau of Factory Insection." (4)*

For a while a copy of these rules was mailed with each order relating to exhaust work. But there was a wide gap between following them intelligently, explanation by inspectors and the finished construction. The rules had a splendid educational value to those who would benefit thereby, but they carried no legal authority. However, at this time, I am told that engineers and contractors were invited to submit their plans, which in many cases they did, and better results were gained thereby. (4) Change in the administration of the Department of Labor, the transfer and resignation of officers, tended to a lax control over exhaust construction.

We are now brought to May 15, 1915, when the rules that have been described were adopted, and became effective as legal provisions—but still with the provision that plans *may* be submitted for examination and approval. (4) (6) The investor in a system could still be the victim of the unscrupulous or ignorant contractor, or of his own desire to construct what is a highly technical apparatus at little expense, and in so doing, perhaps have to double his original investment. It has happened many times.

It is regrettable that many of the standard manufacturers of fans do little or no suction pipe work in the field. Usually their engineers are eminently capable in the design and construction of exhaust work. The reason given is, that to give suitable results, they cannot compete with the smaller contractor, and also that it is a more satisfactory and profitable business to simply manufacture the fan and do general ventilation work. Much of our present knowledge on this subject has been given us by these representatives. It is a pleasure to make this public acknowledgment and we thank them for their advice and courtesy.

As the result of an investigation in exhaust system installations throughout the State, extreme inefficiency in construction and maintenance was shown. For this reason, officials of the Bureau of Inspection acted under the authority of section 86, subdivision 5, of the Labor Law. This provision states in substance that the Industrial Commission (which administers the factory law), may require plans and specifications to be filed, for any machinery or apparatus to be provided or altered pursuant to the requirement of an order issued under the law.

About January 30, 1919, the following procedure was inaugurated: When an order is issued to remove excess dust or other impurities, this sentence is added to and becomes a part of the order, "File plans and specifications for approval by the Bureau of Inspection of all machinery and apparatus to be provided pursuant to the requirements of this order."

These plans are now examined by members of the inspection force. The premises involved are always visited to note the physical conditions pertaining to the proposed construction before the plan is finally approved. Fre-

* This and succeeding numerals in parentheses are references to list of authorities on page 219.

quently plans are returned to a contractor two or three times before they meet the requirements of the industrial code and good engineering practice. The supervisor of the district which contains the premises involved is notified of the final approval of the plans and a copy is placed in his hands. It is his personal responsibility to see that the finished construction conforms to the plans. Both the supervisor and the examiner are held directly responsible for any neglect of duty which would cause the failure of the system.

Not only has a great gain in the efficiency of exhaust work been accomplished by this procedure but the manufacturer is saved his original investment. It may cost him a bit more for the first installation, but he will not have to dismantle it sooner or later and virtually construct a new system to gain the required efficiency. The standard suction pipe manufacturer is protected from the unscrupulous or ignorant contractor who continually outbids him because of cheaper materials and workmanship, and the poor mechanic is forced to do at least reasonable work. One contractor, whose plans for the removal of woodworking dust failed to gain approval, said to me, "Oh, pass those plans as they are," that company does not care whether there is any suction or not. I will guarantee to make it a good job." In this case, it was known, however, that although the firm was placing the installation as a result of an order from this department, that they were anxious to have 100 per cent efficiency to the end that no further expense or bother would attend the condition.

We have been guided in our work on the removal of fumes and gases by Bulletin 82 of the Industrial Commission, which was compiled by the Division of Industrial Hygiene of the Bureau of Inspection. Also, many of the present code rules relating to the removal of dust can be applied to this phase of the problem. (3) The Director of the Division has recently completed full specifications and rules for the removal of fumes and gases. It is hoped that they will soon be adopted in legal form. (3)

Because of the breadth of the subject, we will be compelled to consider almost solely the removal of dust. For the same reason the rules governing the removal of dust will not be quoted as a whole, but only the salient features taken up; those features wherein systems are liable to fail. Industrial Code Bulletin No. 12 covers the subject and can be had on application to the State Industrial Commission. (6)

An exhaust system may be briefly defined by stating that it consists of a hood or hoods, which catch the dust or gas. To the hoods are connected branch pipes. The branch pipes are then connected to a main suction pipe, and in turn an exhaust fan is connected to the mainpipe. The fan generates an air velocity from the hoods, through the pipes and in this way refuse is carried away from the operator's person to the outer air. In case of dust, the fan is further connected, on its discharge side, to a dust separator.

The hood is one of the most prevalent items in the failure of a system, both in construction and maintenance. It should be so constructed and placed as to receive and confine the dust or gas, and in case of dust, be so connected to the branch pipe that the refuse thrown from the polishing, buffing or grinding wheel, by its centrifugal force will enter the branch pipe and be picked up by the highest velocity of air. (1) (5) (6) Diameters of the branch pipes are fixed in the code and are in proportion to the grinding surface of the

wheel. Where the branches are very long, the friction loss in the system may be decreased by making the pipes at least $\frac{1}{2}$ inch greater in diameter than the sizes given in the tables. (8) One leading fan manufacturer states, "Branch pipes should be of sufficient size so that the largest volume of material handled will never occupy more than 25 per cent of the pipe area." (8)

The main suction pipe must be proportioned so that its area, at any point, shall be not less than the combined areas of the branch pipes entering it between such point and the tail end of the system. (6) The increase in the size of the pipe should be in a continuous taper not in sharp increases and then a straight length of pipe. Eddies and whirlpools of air are caused by the latter method which retards air velocity. It is recommended that the area of the main pipe be further increased twenty per cent over and above the sum of the areas of the branches. It is important only where large volumes of refuse are carried in the piping and then in some cases it is not a sufficient increase.

On the other hand there are instances where small quantities of refuse are carried, or none at all, as in the case of smoke or gas, when the consideration of velocity of air irrespective of volume is desirable. In some such cases the piping can be made considerably smaller than the quoted rule calls for. This will allow a smaller fan, and a lower operating cost.

Branch pipes must enter the main pipe at an angle not exceeding 45 degrees and incline in the direction of the air flow at the junction with the main. The workmanship within the piping should be smooth. All joints in the piping should be lapped at least three-quarters of an inch in the direction of the air flow to reduce the resistance and friction. (6) Every bend, turn or elbow in the piping shall be made with a radius in the throat equal to at least one and one-half times the diameter of the pipe on which it is connected. (6) This provision is of the utmost importance and does not seem to be understood by many. Air under pressure will not turn a sharp corner, any more than an automobile at top speed can, without meeting disaster.

Let us assume you must make a right-angled turn in a 12-inch diameter pipe. It is bad practice but sometimes cannot be avoided. Use a scale where one inch equals one foot. With a compass draw one-quarter of a circle whose radius is one and one-half inches. Then on either side of the quadrant so drawn, with the compass point in the same position, draw two quarter circles, but with radii one-half inch greater and one-half inch less, respectively. Eliminating the middle circle, and allowing for the scale, you will find you have a pipe one foot in diameter turning with a radius in the throat of eighteen inches, which is one and one-half times the diameter of the pipe.

The rules provide that sufficient static suction shall be maintained in every branch pipe within one foot of the hood to produce a difference in level of two inches of water, between the two sides of a "U" shaped (glass) tube. (5) (6) The test shall be made by placing one end of a rubber tube over a small hole made in the pipe, the other end is of course connected to the water gauge.

Whereas two inches is a good standard, there are some cases where it is more than necessary, and many cases where it is insufficient. The pearl button industry where as high as six inches static suction was found, is an example of the latter case. The static suction method just described is a practical and easy way of measuring air velocity in field work.

Dust is carried in suspension through the piping by the flow of air,—if it is too slow, the dust drops to the bottom of the piping and clogs the system. It follows that the larger the quantity of dust carried, the larger the pipe and volume of air flow required. Sometimes a system fails to properly remove dust or refuse. A test shows a sufficient air velocity in the piping, but examine the hoods,—you will find they do not catch and retain the dust so as to be picked up by the air.

The velocity of air in feet per minute may be calculated by this formula:

(1) (7)

$$V \text{ equals } 4,000 \sqrt{\frac{h}{2}}$$

Where:

V equals velocity of air in feet per minute.

h equals "U" tube reading.

In the relation of velocity of air to pressure in an exhaust system, an authority on fan engineering states "The laws governing the flow of air are perhaps less understood than almost any other branch of engineering data." (1) A man may be an excellent sheet metal worker, he may be familiar with the industrial code rules, but if he has not made a study of this relationship, the results are problematical.

Friction loss in piping is the result of pressure due to the air velocity, intake and discharge loss, length of pipes, turns in the pipes, the dust separator, and rough workmanship within the pipe. Friction loss may be construed in terms of velocity heads. A velocity head is equivalent to the velocity of air flow through a pipe in feet per minute. For instance, if air flows at 4,000 linear feet per minute, the velocity head equals one inch pressure, but if it flows at 2,000 feet the velocity head equals one-quarter of an inch.

From theory and practice it has been derived that one velocity head is lost in approximately every fifty diameters of a suction pipe, and that the friction loss in a proper radius elbow is equal to ten diameters of such pipe. There are several formulas for gaining the total friction loss in a piping system. The following one has been found very satisfactory:

Where:

V. P. equals velocity pressure in inches of water.

F. L. equals loss in inches of water.

V. equals desired velocity in piping.

L. equals length in feet of suction and discharge piping.

D. equals sum of areas of branch pipes in feet diameter.

Then:

$$V. P. \text{ equals } \left(\frac{V}{4000} \right)^2$$

F. L. equals $(L \text{ plus elbows } \times 10) \times V. P.$

$$\frac{D \times 50}{}$$

F. L. inches plus:

1.50 velocity heads for intake and discharge loss.

1.00 velocity heads for loss in dust separator.

Equals total operating head in inches of water.

This result can be converted readily into ounces pressure per sq. in. by multiplying by the decimal .5768. (1) (2) (7) (8)

You ask why this treatise?

The manufacturer of a fan tests it under various pressures and determines its equivalent capacity in cubic feet per minute under these pressures, and also the speed (R. P. M.) and horse power.

It is then so rated to the consumer.

In New York City there were two exhaust systems tested recently and found to be complete failures because the contractor had no knowledge of the theory governing friction loss. The sheet metal work on both are of good workmanship and show a general knowledge of the industrial code rules. Both systems show a static suction in the main near the fan of two inches, but in the branches near the hoods one-half inch and five-eighths of an inch respectively were found. The trouble is due to long lengths of suction and discharge piping to widely separated machines, numerous elbows and small separators. The inlet area of the fans, however, equals the sum of the areas of the branch pipes plus twenty per cent.

In these cases and many others this should not have been the governing principle. The friction loss should have been reckoned and a fan chosen of sufficient capacity to overcome the pressure and still generate a suitable air velocity at the hoods, due consideration being given to speed and operating cost. No plans were submitted in either instance to this department for examination. The contractors have been paid in full for their work and material and the installation cannot be approved by the Bureau of Inspection since the dust and refuse is not removed.

In this connection it seems fair to say that in this day and generation the owner of a factory should realize that dust or fumes must be removed at their origin in workroom and should bear it in mind when laying out machines or other equipment. In regard to fans, always use what is known as a centrifugal cased fan or steel plate exhauster in pipe systems, or technically speaking in resistance. Never advocate or use a disc or propeller fan. The fan manufacturer grants they are designed for use in free air only (1). Some manufacturers rate a disc or propeller fan to work in resistance up to one inch static pressure (1); others state that the use of their fans is permissible in a piping system having no greater resistance than a straight pipe in cross-sectional area equal to the fan used and in length equal to thirty times the diameter of such fan. Particularly on the suction side, I have failed to find a satisfactory installation where a disc or propeller fan was connected to piping, no matter what the resistance.

One more statement and I have finished. As industries grow larger, the tendency is to crowd all of the exhaust construction into one department and room. Unless suitable provision is made for an influx of heated air, change of air in the workroom may be so frequent that the room is chilled in the cold months of the year.

An installation for polishing combs which I have in mind chills the workroom within certain limits a degree per minute. There is a complete air change in the workroom every minute and thirty seconds. Draughts prevail. Even the workroom doors are hard to open because of the partial vacuum so formed. No plans were submitted for examination or for advice on the proposed construction. The investment is practically a loss to the company and the employees do not receive the protection they should. The condition

must be rectified by bringing into the workroom fresh air in the same volume as is exhausted by the system now installed. This air must pass around steam coils to raise it to a proper temperature in the cold months.

Whereas it is done frequently it entails a large amount of construction and apparatus, and in many instances can be avoided through due consideration in laying out methods and processes. As a matter of fact there is air conditioning apparatus on the market that both heats and purifies air that is forced into workrooms. The air is purified by passing through sprays of water. In the summer, the steam is shut off and the hot air of July and August is reduced in temperature in the workrooms.

Recently plans were acted on where this condition would have prevailed. The manufacturer was warned regarding it, and is now taking steps to overcome the problem. It can be proven that the manufacturer has been and will be saved thousands of dollars through action and advice by the State on proposed construction for the removal of dust, fumes and gases.

We hope in the future to even better perfect the procedure of which the submission of plans and their examination is the foundation, to the end that the employer and employee will reap their respective benefits by more healthful working conditions.

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MR. GERNON: We all readily realize that to handle the subject just read means of necessity some technical phases of the question. Mr. Northrup endeavored to reduce them to the minimum in order to present the matter as clearly as possible in the time allotted.

We will now have a discussion on Mr. Northrup's paper, and, permit me to say that the next paper is a good one and I hope you will all remain to hear it because it covers a subject that probably produces more hazards and injuries that are not recognized than any other. I refer to the question of lighting.

DISCUSSION

We will now hear from Mr. Arthur A. Farrell, Factory Inspector, Brooklyn, on Mr. Northrup's paper.

MR. ARTHUR A. FARRELL: Mr. Chairman, Ladies and Gentlemen: I have listened with interest to the paper by Mr. Northrup, "Development in the Removal of Dust, Fumes and Gases from the Factory Workroom," and note that due to the wide scope of the subject he limits himself to the removal of dust alone. It is well, for if the whole subject was gone into, I am afraid we

not only would miss to-night's train, but probably next Thursday's train also.

Let me quote Mr. Northrup. He defines an exhaust system as follows: "An exhaust system consists of a hood or hoods, which catch the dust or gas. To the hoods are connected branch pipes; the branch pipes are connected to a main suction pipe and in turn an exhaust fan is connected to the main pipe. The fan generates an air velocity from the hoods, through the pipes, and in this way refuse is carried away from the operator's person to the outer air. The fan is further connected on its discharge side to a dust separator."

You will agree with me that the definition is a very simple one, apparently there is nothing to it. Yet, Mr. Northrup states as an undeniable fact, that many manufacturers have wasted their money on inefficient exhaust systems. Why? First, because fan manufacturers admit that they specialize in the manufacture of the fans and let the actual construction of the system to outside contractors who are, in numerous cases, nothing but tinsmiths who may excel in cornice and leader work but are lost when it comes to real work, that is, exhaust system construction.

Second, the average contractor constructs and installs a system without ever considering the work the system will be required to do, and hardly ever gives a thought to the technical questions involved.

Since it has been necessary to file plans with the Department for approval before installation of an exhaust system, we have had a closer check on the contractor resulting in better systems and naturally better conditions in the workshops.

You all are familiar with the requirements as to the static suction necessary to pass a system, and I find that the contractor works with the idea of getting this two inches, regardless as to whether the dust ever enters the hoods. In other words, he is interested in getting the system passed and in most cases never tests the system or ever sees the system in operation. He has worked with the idea of connecting a mystic maze of pipes to a fan and that in turn to a separator which is as much a mystery to him as it is to the public who view it from the street cars as they ride to work.

After testing many systems, after observing conditions found, I am somewhat at a loss to account for the many mistakes continually made by the contractor. I often wonder, does the contractor ever visit the factory before installing the system? If so, did he ever watch the operators at work; did he note the work performed; the kind of work, as to size and form? If so, why is it that the hoods installed in a brass bed factory are the same as those installed in a metal novelty factory? The size and forms of the materials differ a thousand fold.

The point that I am endeavoring to bring out is, that the contractor engaged in this work (I refer to the installation of exhaust systems) has not given this important matter the necessary and proper consideration and study. For instance, a contractor lands a job, starts work on his sheet metal and then writes his favorite fan manufacturer to send him a fan, number so and so, which has an inlet of so many inches, never giving a thought as to its use or the power available for its operation. All this, before he has completely laid out the system. In due time the system is installed, when tested fails to pass—why? Not enough static suction. What happens? The contractor immediately directs the factory superintendent to increase the speed

of the fan. It is now running at two thousand revolutions per minute, so it is speeded up to twenty-five hundred revolutions per minute, and, on the second test, it passes. Consult the fan catalogue and you most likely will find that the fan in question is rated to do the work at seventeen hundred and fifty revolutions per minute. Now, what happens? Needless to say, the fan bearings soon wear out, and wear out often, meaning added expenses. The belt, due to the high speed, stretches and slips, and if this system were to be tested six months later you would find it back where it was at the start, — below par.

Then again, Mr. Fan is not always the guilty factor. Take a case where the separator is one hundred to one hundred and fifty feet, and even more, from the fan. Possibly a number of elbows and sharp turns in the discharge pipe, and here the contractor ignored friction loss, resulting in the failure of the system. To many contractors, friction loss is a thing unheard of; he never took the time or trouble to study this subject, for he was interested in the two inches of static suction and was leaving the discharge pipe to take care of itself.

The separator is at times the guilty factor, but of late contractors have been making the air outlet large enough to allow the air to escape rapidly enough so as not to create a large back pressure, taking the chance that the dust may not be fully precipitated.

There is still an important factor that may be at fault, so let us grant that the separator, discharge pipe, fan, main duct, and branches are all properly constructed and according to Hoyle; that there is greater than two inches static suction at all points where required. Now, the important question: Are the hoods properly constructed, do they catch the dust; has the contractor studied the operations performed; the size and forms of the material polished or ground, and, having done this, has he constructed hoods to meet the actual working conditions? Or, has he installed the same old hood, good for some things, and which is removed when they interfere with the work? It is possible that some day these hoods may be put back, even if it is only when the inspector makes his next inspection. This system is also a failure.

In only one case can I recall where the contractor had furnished about half a dozen hoods of different sizes, an adjustable type to be used when the others would not do. In other words, he had studied the work and material and then designed a few hoods that would do the work when the others would not.

The point raised as to whether the contractors study the needs of the polishing industry is the answer to why contractors install poor, inefficient systems. Until the contractor wakes up to the fact that we require an efficient system which will remove dust, and at all times, and studies both the practical and technical questions involved, then, and then only will we have accomplished the desired results — that is, efficient exhaust systems.

MR. GERON: The next person to discuss the paper is Mr. Samuel C. Wilson, Factory Inspector, New York City.

MR. SAMUEL C. WILSON: Mr. Northrup and Mr. Farrell have covered the subject very thoroughly, but there are one or two points on which I would like to touch relative to the contractors or those who install the ventilating

systems. Tinsmiths and sheet iron workers are often asked to bid upon and construct ventilating systems to comply with the orders of the Labor Department. On many of these people the manufacturer depends either through friendship or faith in his ability to devise and install a good system for him. Many of these people cannot, according to engineering principles, devise such, and attempt by rule of thumb to draw plans in pencil, or without drawing them and submitting these for correction, install ventilating systems which according to the ideas of fifty years ago would be considered fair, but inefficient according to modern ideas and construction.

Each individual system to be put in, before drawing any plans, requires a study to be made of the conditions. Lack of this is one of the causes for much failure in the past. Any person with reasonable intelligence can, according to present laws and rules, lay out the piping system, but on hood construction, fan capacity and numerous essential minor details depends whether the system is of any use or not.

Included in this study, there must be noted wheels on which grinding, buffing and polishing is to be done, the necessary thickness of metal; the size of dust collectors; the speed of fans necessary to overcome friction and produce the necessary suction in the branch pipes; the point of the system's discharge; the means of heating the room or building in which the exhaust system is to be installed; the size, weight and nature of the material to be handled; the size of the wheels and the speed of the wheels on which the grinding is to be done.

Those of the Department, whose duty it is to pass upon plans and installations, note only too often how some contractors have attempted to construct systems, which have been decidedly costly to the manufacturer to make and maintain. In numerous cases, it is found they have been made of material decidedly light in weight which is neither durable or inexpensive and performed workmanship of the poorest kind, for which the manufacturer had to pay and became the victim.

I could enumerate and call to your attention numerous cases, which I have seen, where exhaust systems are shut down during the winter months, for the reason that no consideration was given, when the exhaust system was put in, to the heating of the room and where such a volume of air was removed from the room, that it was impossible to heat the room for the reason that too much air was moved through the system, far more than necessary. Many other cases have been noted where material had been furnished of such a light nature as to render the piping and hoods of the systems useless in a month; where the stinting of a few rivets, and the poor workmanship in general, allowed the piping to fall apart in a few months.

Such construction, the Department is trying to prevent, favoring no one, but ready at all times to lend a helping hand while plans are being drawn; correcting them before the installations are put in and giving advice, which experience and a knowledge of the laws relating to air movement and air conditioning has taught us. Therefore, file plans in all cases before commencing work.

MR. GERON: Has anybody anything else to say on the discussion of the paper?

MR. WILLIAM J. GORMAN, Associated Industries of New York State, Buffalo: Of course, we heartily agree with the opinions expressed in the papers by the three or four inspectors, but I am wondering if the Department will be in a position to formulate a set of specifications covering the removal of wood dust? As I understand the law, the code as it exists now, there is no such rule, and I have found by experience that some of the manufacturers who have been required to comply with such an order have only received specifications for the removal of emery dust, which is no guide whatever. Inspectors will appreciate that the removal of emery dust presents a different problem than the removal of wood dust. I believe it would be better for the Department and a greater guide for the employer, if such a set of specifications would be promulgated as soon as possible.

MR. GERON: I might say that we realize that while our code calls for two-inch static pressure, it is not always enough. Mr. Northrup brought that out in his paper. We believe it could be remedied.

Any one else anything to say? I might say, incidentally, about the wood dust question, we all know that wood dust is injurious and that it may not require the same treatment as other heavier dusts. Our experience in handling these exhaust systems, as they exist at the present time, shows that there is necessity of changing the present code?

Any one else anything to say on this question?

This morning the question came up of our method of handling new machinery. A letter, which came in the mail during the noon recess, I want to read as a simple illustration of the many we receive. I might say that in the past four years the inspectors are reporting all machines that are not properly guarded, that is, all new machines installed since the last inspection. This firm I wrote to just a few days ago and this is their reply that reaches me in this city:

Answering yours of November 25, concerning gear guards on the Tool Chatham mixing machines installed in the plant of the above company, the matter has already been called to our attention and you will now find these machines are provided with the necessary guards.

Our factory has been instructed to ship no machines into New York State before equipping same with guards. In fact, we are arranging to equip our machines in this way regardless of where they are shipped.

Very truly yours,

.....

I want to say that all these letters go through my hands and receive my personal attention. In the thousands we may have handled, there has been but one manufacturer who tried to tell us that his machine was all right, and didn't meet us in the spirit that all of them do. This letter is indicative of the spirit in which they meet us. The other manufacturer changed his mind and followed the same procedure.

I spoke this morning about another letter, and I think I will read it now, because later on somebody might want to speak on this question. This was a letter handed in by a person attending this congress and who had to leave.

The inspectors of this Department realized years ago that to get men to wear goggles they must necessarily be fitted to a man's vision. To put an ordinary goggle on a man who has defective vision would be like tying a handkerchief over his eyes. There is nothing so productive of accidents, to my

mind, as defective vision. I might say, in talking to one of the managers in one of the largest, if not the largest, establishment in this State on this question he said, "I agree with you, and I can tell you a good story. In examining one of our employees we found he had defective vision and we had glasses fitted for him. When he left the factory and walked home he discovered for the first time in his life, that it was possible to see the distance of across the street."

Now, imagine that young man with defective eyesight, defective from childhood, and never realizing that a person could see that distance. Just imagine that man in the average industrial plant and his chances of injury; take him in a foundry, for instance, he might never see a crane moving along because he couldn't see the distance of across the street.

After the company had fitted him with proper glasses he discovered that he lived in a new world, that he could at least see the other side of the street as he walked along.

We have held that even when men wear goggles they should be fitted to their vision. This man brings a new thought to my mind. I will read the letter to you and you will all get it. Men wear glasses in industry and they won't take those off to put on a pair of goggles that would retard their vision, so, this man has brought to my mind a real thought.

I would like to ask a question, but can not be present at any more discussions. Possibly you may bring the matter up if you deem it worth while.

Why do not goggle manufacturers make some provision for goggles to be worn over glasses.

My experience is, that there are a large number of wearers of glasses and that only under strict orders will a man take off glasses and lay them down, liable to breakage, in order to wear goggles.

Thanks.

LESLIE RURY,
Foreman, Semet-Solvay Company.

To my mind this is a new thought, it may be possible to make a goggle that a man could slip over his glasses. We all know the goggle proposition has been a difficult one to solve, not the goggle proposition exactly, but inducing the men to wear them.

Now, we come to a point in the program where I think the next paper will amply illustrate some of the dangers in industry due to poor lighting, and I think the discussion will bring out some of the features that some of us may not have realized. The subject is "Development of Factory Lighting" by Mr. George C. Ward.

THE DEVELOPMENT OF FACTORY LIGHTING

BY GEORGE C. WARD, FACTORY INSPECTOR, NEW YORK STATE INDUSTRIAL COMMISSION

"In the beginning God created the heavens and the earth. And the earth was without form and void; and darkness was upon the face of the deep. And the spirit of God moved upon the face of the waters. And God said, let there be light, and there was light. And God saw the light, and it *was good.*"

Light has been the most precious possession of man ever since he first appeared on the earth, and, next to the air we breathe, the water we drink,

the food we eat, and the ever advancing, controlling mind of man itself, light remains our most necessary possession for the progress and advancement of the race. All advancement in art, in the expression of the beautiful, is made possible by eyesight, and most of the advance in science would have been impossible without it. While we might conceive of a certain amount of progress being made by a sightless race, with a highly developed, specialized mind, the difficulties probably would be so great and the progress so slow, that perhaps millions of years would elapse before such men would advance as far as present man has advanced since creation, which scientists place at approximately 500,000 years ago.

Prehistoric man undoubtedly soon became familiar with the phenomena of fire and light, and observed many natural examples of artificial light.

When the volcanoes, in their grandeur belched forth fire, smoke and lava; when the forked lightning set fire to the dry trees and the underbrush of the forests; when natural gas escaping through fissures in the earth crust became ignited, prehistoric man no doubt at first observed in fear and trembling. Then, curiosity overcame fear, and the *first* great advance of mankind was made when individuals learned to use fire. No trace of a fireless tribe of man has ever been discovered, although it is not positively known in just what manner man first discovered that fire was subject to his control and could even be called into being by appropriate means. We still find in different parts of the world, native tribes taking advantage of hot springs, petroleum wells and accessible volcanic craters. Before the ancient tribesman could use the knot of wood which he undoubtedly burned to illuminate his cave or hiding place it was necessary either to produce or preserve fire.

Although primitive man knew how to produce fire by striking flinty stones together, or by rubbing together pieces of dry wood, the method ordinarily used, as shown by the observance of some primitive tribes to this day, was to keep fire burning day and night. The knot of wood was, without doubt, the primitive lamp and was lighted at will in these continuously burning fires. Human culture may be said to have begun with fire, of which the uses increased in the same ratio as culture itself increased. To save the labor expended on the initial process of producing fire and light, or the bother of carrying it around, as was practiced by some of the earlier tribes, primitive man hit on the expedient of a fire which should burn day and night in a public building. The Egyptians had a fire burning constantly in every temple; the Greeks, Latins and Persians in every town and village. The Mexicans and Peruvians kept their national fires burning upon large pyramids. The so-called "eternal lamps" in the synagogues and in the Byzantine and Catholic churches may be a survival of this ancient custom.

All architecture, public and private, sacred and profane, probably began with the erection of sheds to protect the sacred fire. The family probably *only* commenced to develop after the human couple and their children began to gather around their own fire place. The nation, the tribe, the family, had fire for their common symbol—and from fire came artificial light. Man made his first great advance out of obscurity surrounding the untrained animal when he learned to control and use fire, and his progress and development has been steady and sure ever since,

That was the first great achievement of the human race, for man had found himself and become a thinking, reasoning human being.

After the pine knot, the next development was probably in the use of certain sea shells and the skulls of animals in which were burned animal fats and the oil of fishes. The principle of these first lamps was retained in the earthenware lamps used by the ancient Egyptians and Romans. Thus, another great advance from the knot of wood was made when lamps, no matter how crude, were introduced. For the past one hundred and twenty-five years, when inventors first began to improve on the primitive lamp, the improvement has been enormous. The first improvement was made in wicks and burners in France in 1783. In 1784, Argand, a Swiss, living in Paris brought out his Argand burner in its simplest form, but the use of lamps did not become common until years after. Not until the year 1850 do we hear of mineral oil having been used in lamps for the production of light, at which time it was introduced by James Young, a Scotchman, oils such as colza, nut and rape being the chief illuminants before that time. Candles made of tallow, sperm oil of whales, spermaceti and wax also were used, being the only source of artificial light in many sections.

Many curious lamps survive to the present day. One of these is the "ballo-burro" or butter ball lamp which may be still found in some of the Sicilian basements along Mulberry street in New York City. The butter ball is a lump of pure butter, around which has been moulded a container of pure cheese shaped like a gourd. The melted, plastic cheese is worked around an ice cold ball of butter, then rapidly cooled until hard. The butter then will remain sweet, indefinitely, if kept cold. Through transportation and other causes, the butter sometimes becomes rancid, when the thrifty Sicilians, instead of throwing it in the garbage can, place a bit of string in the center for a wick and use it for a night lamp. After the butter core has been entirely consumed, the cheese container, which never gets rancid, is used for soups, or is ground up and used on spaghetti.

In 1834, camphene, a volatile hydrocarbon oil, distilled from turpentine, was used to some extent, but soon was discarded on account of its dangerous properties. Many inventions and patents were introduced to advance the light-giving properties of oil-burning lamps, but all except one or two fell woefully short of producing what we would now call decent illumination.

Most of you who have worked in shops thirty or thirty-five years ago remember the tin lamp hanging from a nail in the wall, just over the work bench and the tin reflector that threw so much light into your eyes that you were obliged to wear a paper shade. Nothing was done at that time to regulate the lighting of factory workrooms. The next advance was in the use of artificial gas. What the electric light has since accomplished for the advancement of illumination, gas did for better illumination when it superseded mineral oil. A little more than one hundred years has passed since gas was given a trial in the public lighting of the Westminster Bridge in London. In 1808 Sir Humphrey Davy discovered the electric arc light, the principles of which are used to a great extent in street lighting to-day. He used about two thousand cells in his batteries to produce the light.

In 1879 Thomas Edison invented the incandescent light, which has revolutionized modern lighting and nearly succeeded in turning night into day. No

longer do we need to strain our eyes on account of lack of light, or lie by the fireside in study to obtain an early education, as some of our greatest men did.

The problem in early factory lighting was to obtain sufficient light; the problem to-day with our high intensity sources, is to so place the lamps that uniform illumination will result, which will be entirely free from eye strain. I will now briefly describe the structure of the eye and the effect light has upon it, in order that we may better understand some of the problems that present themselves in modern factory lighting.

Light is that mode of motion which is capable of affecting the optic nerve. The only physical difference between light and radiant heat is one of wave length. Bodies that emit light generated by themselves, as the sun or the candle, are called luminous; bodies that merely diffuse the light that they receive from other luminous bodies are said to be illuminated; visible bodies may be luminous or illuminated. Bodies are transparent, translucent or opaque, according to the degree of freedom which they afford to the passage of luminiferous waves. Glass and water are transparent; ground glass is translucent, transmitting light but not allowing bodies to be seen distinctly through it; opaque bodies cut off the light entirely and prevent objects being seen through them at all, the light being either reflected or absorbed. A ray is a single line of light and since rays of light are straight, opaque bodies cast shadows, either perfect or imperfect. A perfect shadow is the darkened space behind an opaque body, from which all rays of light are cut off; an imperfect shadow is the darkened space behind an opaque body, from which part of the rays are cut off, called the umbra and penumbra respectively. Light traverses the ether with a velocity of about 186,000 miles per second. It would take 17 years for a cannon ball to leave the earth and reach the sun; light makes the journey in 8 minutes, 18 seconds, but for terrestrial distances the passage of light is practically instantaneous. Rays that do not enter the eye are not visible. A sunbeam entering a darkened room at such an angle that it does not strike the eye is visible because the floating dust reflects some of the rays to the eye. If the particles of dust were absent the beam of light would be invisible.

The organ called the eye is a nearly spherical ball, capable of being turned considerably in its socket. The outer coat is firm and, excepting in front, is opaque. This is the sclerotic coat, or "white of the eye;" its transparent part in front is called the corona, which is more convex than the rest of the eyeball. This corona fits into the coat as a watch crystal does in its case. Behind the corona is a diaphragm or curtain, called the *iris*. It is opaque and colored. When we say such a one has blue, brown or gray eyes, it is the iris we see. The little black spot in the center of the iris is a small circular window called the pupil, and the iris contracts and expands to regulate, to a certain amount, the light that passes through the pupil. Back of the pupil is the crystalline lens, dividing the eye into two chambers, the anterior containing a limpid liquid called the aqueous humor; the posterior chamber containing a transparent jelly called the vitreous humor, which is enclosed in a transparent sack called the hyaloid membrane. These are the refracting media. The crystalline lens is controlled by muscles which automatically alter its shape, so as to focus the picture of the object seen on the retina at

the back of the eyeball. The retina which lies just back of the hyaloid membrane is an expansion of the optic nerve, and is a very sensitive layer on which the light falls, producing a picture or image of the object seen. The most sensitive part of the retina is the "yellow spot," at the center of the back of the eye. The point at which the optic nerve, consisting of a large number of small nerves, enters the eye is called the "blind spot," located at one side of the "yellow spot," nearer the nose. Between the retina and the sclerotic coat, is the choroid coat, intensely black and opaque.

The eye optically considered is simply an arrangement, like a camera, for projecting inverted real images of visible objects upon a screen made of nerve filaments, and is a wonderful instrument.

The retina is the sensitive part of the eye and, while it is wonderful in its ability to recuperate, it is not advisable to strain it. In order, therefore, not to injure or fatigue the eye, the following points should be noted, which are conditions to be avoided in laying out a system for properly illuminating a factory workroom.

First, glare,—bright lights shining directly in the eye, even though the angle is considerably out of the ordinary range of vision and one is not looking directly at the light. There is considerable difference of opinion concerning a mandatory minimum angle of glare, but our committee on the lighting code will no doubt arrive at a satisfactory solution of the problem. Light coming in large quantities from an unusual angle should be avoided. Certain parts of the retina, are through long use, trained and accustomed to receive light, while other parts are not prepared to receive strong light. In average daylight we receive a gentle light from a great many directions, mainly from above; if, therefore, a strong light falls on the retina in certain places, the retina is strained. Snow blindness is caused by a strong reflected light, coming from below at an unusual angle, producing not only great fatigue, but some times temporary blindness.

The inspector in the field should pay particular attention to conditions of glare and the removal of the same; lights should not be so placed that the rays from them, falling on a glazed or polished surface, such as writing paper, polished metal parts of machines, metal work in lathes or any highly polished surfaces used in the manufacturing or wrapping of articles of commerce, are regularly reflected into the eye of the operator or anyone working nearby, as in this case a picture of the light itself is formed on the retina, which obliterates the images on the paper or the minute detail of the work being done. Glare of any kind is particularly trying on the eye. The ability to see well means that no part of the retina should be over-stimulated by means of a bright and glary light. This means keeping bright lights out of the field of vision or keeping down their brightness by diffusing globes or bulbs.

Second.—A flickering light should be carefully guarded against, as the iris is unable to keep pace with the rapid fluctuations and consequently, too much and too little light alternately falling on the retina very quickly produces fatigue. Examples of this condition are a flickering open gas jet, met with very often by our inspectors in many small factories; arc lamps, operated with a 25 cycle alternating current; incandescent lamps, met with in certain sections of the State, supplied with current from a generator driven by the

ordinary single cylinder gas engine. You are all familiar with the discomfort caused by a flickering, dimly lighted moving picture, when you have to constantly look away from the screen to rest your tired eyes.

Third.—Insufficient light strains the retina in its effort to see clearly, and sufficient light should always be insisted on by the inspector. All state codes of illuminating intensities give a minimum below which the luminous flux density on the plane in which the work is performed,—whether horizontal, vertical or intermediate plane,—shall not fall.

The State codes of Wisconsin, Pennsylvania and New Jersey are made mandatory in their entirety, with the exception that existing installations in Wisconsin need not be brought up to the code standard until July, 1920. Oregon, Ohio and Massachusetts have codes in preparation. The rule No. 50 of the New York State Code relating to the lighting of factories and mercantile establishments became effective July 1, 1918, being adopted by the State Industrial Commission in accordance with the requirements of sections 51-a and 52 of the Labor Law. This gives the desirable illumination to be provided in roadways and yard thoroughfares, storage spaces, stairs and stairways, halls and hallways, passageways, aisles, exits, elevator entrances and cars. The table of minimum intensities for detailed industrial operations and processes in this State is tentative, and the Commission has extended the time for its adoption to July 1, 1920, when after a year's experience and further tests by our special investigators, and after public hearings it will be adopted as a code rule and become the law of the State. Shop managers throughout the State are requested to co-operate in this work by having illumination tests made under the actual conditions prevailing, and advise the Bureau of Industrial Code of the results of such tests together with their recommendations.

Sources of light that cast streaks on the work should be avoided. These are bad even when steady, because the uneven illumination produced makes it difficult for the eye to adjust itself to the conditions caused by the varying degree of brightness.

Care should be taken to avoid a sharp contrast between a light colored or bright surface on which one is working and dark surroundings; too sharp a contrast is injurious for the reason that the eye does not have an opportunity to adjust itself to the different conditions when glancing up from the work; on the other hand a moderate change in the illuminations is good and rests the eye, because where the eye is focussed constantly and strongly on one thing, the eye requires a moderate change, both in the illumination and in the image on the retina, in order to give it an opportunity to recuperate. Oculists constantly encounter cases of temporary or permanent injury to the eyes through neglect of one or more of the above precautions. Lighting engineers in laying out a large plant, take into consideration all of the above objectionable features and make suitable provisions to remedy them; they also take into consideration the proper color of the light to be used under certain conditions, but by far the larger number of factories in this State, and especially in Greater New York, are small shops with comparatively few lamps, the proprietors of which will never seek the services of a trained lighting engineer. It will be in these small shops and factories where the inspector will find some of the most objectionable features. Our inspectors have

already encountered employees in certain needle trades in New York City working within two feet of unprotected 200 Watt nitrogen lamps; they have found numbers of cutters and pressers in the clothing business working by the light of a few weak, sickly, flickering, yellow open gas jets; they have been in other small shops where the operators were trying to conserve the few remaining minutes of daylight by working close to dirty, grimy windows, with black walls and ceilings for a background; our inspectors have already noticed many such conditions and as I shall show later have given the proper orders to correct the condition.

Light should be regarded as a tool and the effect produced by use of that tool,—illumination; light is a cause, illumination an effect. The object of artificial illumination is to enable us to see things properly and clearly. An object is well illuminated when it can easily be seen without eye strain or fatigue. As it is impossible to do good, satisfactory work with a dull tool, so it is impossible to do good work with a dull light. As it is impossible to properly machine a part or turn a shaft with an improperly set tool, so it is impossible to do the best work with an improperly placed light, casting its rays in all directions except the specific direction wanted.

If you wished to use a nozzle to send a stream of water with sufficient force to smother a fire, you would not pick out a hose fitted with a revolving lawn sprinkler attachment that throws a gentle spray of water in all directions. When you need a light for local illumination at a particular point, why waste it by throwing a gentle stream of light rays in all directions, especially when they can be absorbed by dark colored walls and ceilings. On the other hand one would not think of directing the powerful current from a high-power nozzle on a freshly planted flower bed, where a gentle diffused mist of water was necessary to protect the bed from destruction. So the light from a single unit high power lamp source should be modified, mellowed and directed by use of proper globes and reflectors and made suitable for the use intended; just as the direction and character of a stream of water can be modified by the kind of nozzle used. Our inspectors have many times noticed the increase in foot candle intensity at a working point on the horizontal plane, when the open, bare lamp was enclosed in a conical shade with an inner reflecting surface; conversely, our inspectors have demonstrated many times on the spot, in certain factories in this State, that a much lower wattage lamp, properly equipped with shades and reflectors and properly placed would produce the same amount of foot candle illumination on the working plane that the higher wattage lamp, hanging in the open, unshaded and unprotected from glare, actually produced. This demonstrated a waste of kilowatts per lamp, which at the prevailing rate of current, would make a considerable difference in the overhead expense of any plant of size per year. With the introduction of the higher power lamp units with their greater intensity of illumination, in the effort to produce more light, certain conditions were created which were both dangerous and unsanitary; dangerous to life and limb, unsanitary in that the effect on the general health through undue eye strain was adverse. Illuminating engineers have long recognized that the State should regulate and ameliorate such conditions by suitable laws and codes, which would safeguard the life, limb and eyesight of the worker. Outside any humanitarian considerations involved, to conserve the eyesight of the workman is to enhance

his value to the State; to insidiously destroy that eyesight, a result none the less certain because gradual, would probably in time, through the unfailing law of evolution, produce a spectacled if not blind race. The Illuminating Engineering Society of the United States proceeded to draft a code some years ago, and practically all the codes in preparation and adopted by the different states are modeled after it. In 1913 the society was called to assist the Department of Labor of New York State in formulating the lighting sections of the Labor Law. From that time until the present, a code has been in preparation, some parts of which became mandatory on July 1, 1918, and some tentative, which will probably be adopted with such modifications as actual practice would seem to dictate on July 1, 1920.

It must be remembered that the minimum intensities as given in the tentative code for particular operations and processes, are intended primarily as a safety measure to prevent accidents, rather than as a guide for the higher standards of illumination necessary for economical and increased production. But as the inspection force of the State has been instructed in previous lectures, and will be instructed in lectures to come, they will in turn inform the manufacturer that good, proper and sufficient illumination will give the shop owner using it, better goods and more of them, less accidents, more contented workmen, a smaller labor turnover, and less spoilage which means increased output from a definite number of machines in a given time. The workman, individually, should be intensely interested, especially if he be working on a "piece" basis, as good lights will enhance his working powers, increase his output and consequently his wage. The owner also benefits by the increased output under a constant overhead charge.

A large percentage of industrial accidents may be classed as avoidable, and 15 per cent of these are undoubtedly caused by defects of illumination. The records of the Travelers Insurance Company for 1910 show that 23.8 per cent of 91,000 accidents were caused by improper and inadequate illumination. Since that date, with the improvement made in old and new installations, that figure should show a reduction. The British Government reports show that in winter 40 per cent more men are hurt from falling and stumbling in passageways, stairways, elevated gangways and storage places than in summer, due to faulty illumination. It has been shown in this country from collected data, that in December and January the accident curve is 40 per cent greater than the normal curve for summer daylight.

There is another danger factor to be taken into consideration, the use of an unprotected electric lamp where inflammable materials are being handled and manufactured. Pieces of glass and hot particles from broken lamps might fall into light cotton batting, for instance, or into inflammable and explosive chemical mixtures and result in panic of employees, if nothing worse. Fine wire guards should be used in such cases or double safety bulbs.

In the few cases in which cost and output figures were kept by some factory managers under an old, inadequate lighting system, and under an improved up-to-date system, an increase in output of 15 per cent was noted, spoilage was greatly reduced, the excellence of workmanship on the particular product was increased, workmen made better wages and when questioned refused to return to the old system, although some of them protested when the change was first made; but when their eyes adjusted themselves to the new, improved

conditions they were convinced of their error. In ninety-three plants investigated in Chicago, trebling the lighting intensities, and using proper equipment, increased production 15 per cent with an increased coal consumption of but 9 per cent. In the limited time given for the reading of this paper, it will be impossible to define terms, give equations or the technical manner of laying out a lighting system.

The inspector, the manufacturer and the layman will find all these matters condensed, in untechnical, plain language in the numerous handbooks the light and globe manufacturers are publishing.

To sum up, I would say that the ideal system should combine general and local lighting designed to fit the needs of the particular room where it is to be used; a system that eliminates direct and reflected glare by proper placement and proper diffusion; a system that minimizes the loss of light by absorption in dark walls and ceilings; a system in which the lights are so placed that no black shadows are encountered, and in which a uniform diffusion of the required intensity is spread over the entire area; a system in which local lights are used only where needed; and lastly a system that is periodically kept clean and in the best repair. New York State codes are not "dead letter" codes. They are enforced by a body of inspectors who understand their provisions, and who know how to inspect, and although handicapped by their comparatively small number and the extent of the individual district covered, work day and night to apply the law.

In addition to all other routine work, our inspection force placed during the fiscal year July 1, 1918, to July 1, 1919, 7,427 orders relating to lighting; 880 of these were safety orders to provide sufficient light and 6,547 were orders to eliminate glare. Eight hundred and sixty-four compliances were obtained for sufficient light and 5,644 to eliminate glare. The Mercantile Division of the Bureau of Inspection, during the same period, issued 157 orders relating to light and obtained 133 compliances. It was necessary to bring to the attention of the legal division but 2 per cent of this total, which shows that the factory owner is co-operating to a marked extent with our inspectors. A great many employers, out of humanity, will improve lighting conditions; others have to be shown the material benefits. It is up to our inspectors to properly educate them; the police powers of the Commission will take care of the few recalcitrant ones. The welfare of the State and the nation is bound up with the welfare of the workers, both physically and morally. A physically perfect, contented, happy body of men, means a state with a minimum of unrest. Anything the State can do to help produce such a result, is extending the life of the State. Every little safeguard thrown around the workman to protect his body, his health, his happiness, his family, helps to perpetuate the life of the State and keep down unrest, a condition that is only too often an outcropping of physical ill-being, not easily recognized, but whose ill effect is only too often encountered. Let the good work go on; let the development be such that, when, some time in the infinite future we go forth into the Great Unknown, to meet that condition foreshadowed in the last chapter of the book of Revelation;—(22-5) "And there shall be no night there; and they need no candle, neither light of the sun; for the Lord, God, giveth them light and they shall reign for ever and ever," we shall be "not ashamed."

DISCUSSION

MR. GERNON: We are somewhat behind in the schedule in our discussion and will request that remarks be made as brief as possible.

The discussion on Mr. Ward's paper will now be taken up by Mr. A. J. Smith, Factory Inspector, Albany.

MR. A. J. SMITH: In the paper just read on the subject of factory lighting, your attention was called to the workshop of thirty years or more ago, in which the work room was illuminated with the tin lamp hanging from the wall. At that time no consideration was given to the importance of the walls and windows. The smoke, dust and steam were allowed to accumulate on the windows to such an extent that even the strongest sunlight could not pierce them; the walls were used to hang racks and clothing. Such a thought as cleaning the windows and painting or lime-washing the walls and ceiling were considered unnecessary and a useless expense.

Painted walls with a mat surface give a better reflective surface than a shiny or glossy paint, and also give better results through minimizing the glare and are easy to keep clean and are durable. What a great saving it is in the cost of providing light when you consider that a light painted wall will reflect sixty per cent of light, while it is almost impossible in old factory buildings to get ideal conditions. It is, however, possible to greatly improve the conditions too often found to exist.

The economic value of natural light is a factor which has within the past few years, occupied the minds of many engineers and factory owners. The use of the saw-tooth roof is an illustration of this, also prismatic glass in windows, although expensive to install, has a tendency to focus and bring the light to the center of the work room and, in many cases, pays to install.

The proportion of window surface to floor area in new buildings now receives greater attention than formerly. There is no law covering this point, but I think it is of sufficient importance to be given consideration.

Another important factor which neither our law or codes consider, in relation to this lighting question, is that of the prevention of glare from bright surfaces, and from glare occasioned by sunlight streaming in through windows of factories and mercantile establishments. How these conditions could be rectified is a question which we as inspectors ought to know, and to be ready with suggestions to impart to factory owners and managers.

Have any of you looked out of a window from your work bench or office on a bright day and noticed the extreme brightness of the sky? No doubt it gave you discomfort. The reflection surfaces of highly polished iron, brass, glass, varnished wood, and even paper, often give discomfort to the eye.

There are codes in other states, Wisconsin for example, which deal with these conditions and recommend the use of devices to minimize glare from bright surfaces. Such devices are window shades, awnings, and colored glass.

MR. GERNON: The next to take up the discussion is Mr. John Hoffman, Factory Inspector, New York City.

MR. JOHN HOFFMAN: The paper on the "Development of Factory Lighting" affords us the opportunity to discuss various phases of our present methods of factory lighting, but as time is limited and there is another speaker to follow, I will confine my remarks to one subject.

A subject of some importance in connection with factory lighting is the proper installation of an emergency lighting system. The purpose of such lighting is to guard against panic and accidents due to the failure of the regular lighting system at the time of fire, explosion or other emergency. Emergency lighting is a safety measure and should therefore be treated with the same care and consideration that is given to other matters pertaining to safety.

In the installation of emergency lighting systems, consideration should be given to the number of lights necessary under various circumstances; this would depend upon the size of the factory, the location of exits, the extent of the hazard of the employment, the number of employees working in such factory, and the means available for supplying such installation, also the cost of such installation.

Where a large number of women workers are employed on an upper floor or in a basement of a factory, and are surrounded by inflammable materials, emergency lighting is exceedingly important. Here the question of cost should be of secondary consideration, while in a factory where there are a small number of employees scattered over a large area with wide passageways leading to exits, safety can be assured without the installation of an elaborate emergency lighting system. The provisions necessary in the first instance might entail an unwarranted expense in the second.

It may be found necessary eventually to make further provision in our lighting code with reference to the installation of emergency lighting systems, so as to cover specific cases and particular classes of buildings.

The Labor Law provides that halls and stairs leading to the workrooms shall be properly and adequately lighted and a proper and adequate light shall be kept burning upon the entrance floor and upon the other floors, on every work day in the year from the time when the building is open for use in the morning, until the time it is closed in the evening, except at times when the influx of natural light shall make artificial light unnecessary. Such lights shall be so arranged as to insure their reliable operation when, through accident or other cause, the regular factory lighting is extinguished.

The Industrial Code rules require that, artificial light shall be provided when natural light is less than the intensity of twenty-five hundredths foot-candles at the floor level.

As the law requires that the emergency lighting shall be kept entirely separate and distinct from the regular factory lighting, it is desirable to make the operation of the emergency lighting system as reliable as possible. This system should, therefore, be efficiently installed and it should be frequently inspected and properly maintained.

Factories supplied with isolated plant service should arrange for one of the following means of emergency lighting:

Central station service,

Service from another isolated plant,

Service from a storage battery, or

Service from a separate generating unit driven by a separate prime mover.

Where the factory is supplied with central station service, the emergency system should be supplied from mains from a separate station, sub-station, or transformer.

Gas lamps will also provide a satisfactory means of emergency lighting, where gas service is available, provided the individual lamps or jets are equipped with pilot lights.

MR. GERON: The next person to discuss the paper is, Mr. F. J. Conlon, Factory Inspector, Mt. Vernon.

MR. F. J. CONLON: Mr. Chairman, Ladies and Gentlemen: I shall be brief in my remarks, but there is one most important thing that occurs to me about poor lighting systems, and that is this: When a worker loses an arm or a leg he is compensated under the laws of this State, but if a man, through working through poor lighting systems, suffers a gradual loss of eyesight that can not be traced to any particular place where he ever worked, he is not compensated. Very often when he goes to the employment office of some large corporation that makes physical examinations, one of the qualifications for employment, he is told, is good eyesight and his place in industry is gone. They can't employ him.

That, to my mind, is the most important result of poor lighting systems, and it is a good reason why the State of New York should have, and should enforce its lighting code.

Now, there is another question Mr. Ward has brought out, the economy in production due to good lighting systems. How many inspectors, and others, have walked into factories in the needle trades and right about eighteen inches above the machine table you have found a sixty watt lamp that was creating a great space of glare, perhaps on white goods.

GENERAL DISCUSSION

MR. GERON: Is there anybody else who desires to discuss this question of lighting?

MR. G. HAUSTEIN, JR., American Lithographic Company, New York City: I would like to ask Mr. Ward if he considers it injurious to the operator who retouches photographs?

MR. WARD: I would say, no, ordinarily. But, what kind of light was reflected through the medium?

MR. HAUSTEIN: We use a lamp behind frosted glass in the negative which is black and white. We retouch negatives on color and the artist gets a quality on the negative when the light shines from behind it to show high lights in the negative.

MR. WARD: It would be possible to frost that globe in such a way that light would not, and could not, constitute glare. The light passing through the negative wouldn't constitute glare. If there are no ultra-violet rays coming through that negative, I wouldn't consider it an example of glare, although I would say that the eye should be rested and not be kept continually at one point.

It is necessary to rest the eye, anyway. Each individual eye forms its own idea of glare. Some eyes are very sensitive, others not so sensitive. A sensitive eye would, of course, be weakened in a much lesser time than a stronger eye, although if real glare is present the eye would be ultimately affected. We have a great many special cases of that kind that we are trying to solve. I would not say off hand, without the proper experiments, what the condition would be.

MR. HAUSTEIN: Are there any records in the Commissions office where retouching has been employed for a long time?

MR. WARD: I don't know of any.

MR. GERNON: I think we can say we get our share in relation to the lighting. I think there is more ignorance on the part of factory owners on the question of lighting than on any other. I think that none of us know any too much about it. We do see thousands of factories, visited by this force, where the ill effects of poor lighting are shown, but many employees don't realize what the condition is, until it is too late.

In talking to one of the greatest oculists of the State he told me that the number of cases that he was getting from side-glare, for instance, was amazing. Girls sitting in an office with a lamp thirty feet away, do not notice that it is bothering them. They have no realization that it is bothering them, but in time it produces very serious results.

Is there any one else?

MR. R. J. STEPHENSON, McIntosh & Seymour Corporation, Auburn: In regard to goggles and spectacles, I have made special inquiry into this question of a goggle manufacturer, and he advises me that they are in position to furnish goggles, lenses, etc., specially ground for the needs of the wearer, at a low figure.

MR. GERNON: We know lots of oculists are doing that, fitting the goggles to vision, but this man raised a question of getting a goggle over the glass, as he doesn't need the goggles all the time. He may need them in the work he is doing an hour out of the day, but if he doesn't wear those goggles for that hour, he may not be able to wear glasses. So, the man will not take the glasses off to pick up the goggles and put them on; he might if he wore the glasses, just slip goggles on over the glasses. That was the point brought out in the letter, and I think one that could be well considered by oculists.

MR. G. S. RAVEN, Manufacturers' Safety Bureau, Watertown: The subject I am going to speak about isn't lighting, but what causes most of the lighting difficulties in all the factories.

This program was gotten up to cover almost everything in the safety line, and I think it has done it in very fine shape, but one thing has been overlooked. I believe the electrical hazard is one of the most important things and something that would be interesting to practically every person attending the Conference. If they consider a particle of dust, a strong ray of light, harmful, how about the switches and the large transformers that carry fifty thousand volts? I think it is time, and it would be a good thing, to discuss that and have a paper written on it. I believe it would be interesting to everybody attending the Congress. I would like to hear of the opinion of the rest.

MR. GERNON: The law covers switches, requiring a rubber mat. We find rubber mats are not always effective as a nail or tack may get into the rubber mat and cause very serious results.

MR. RAVEN: There is no question but that improper wiring has been productive of very serious results. Let me say that it is pretty nearly time somebody produced some legislation to cover wiring in the State generally. In some places we find the underwriter's provisions, I presume we can find an electrical code created by the Bureau of Standards in Washington by the best men in that line in this country, but it is like our labor laws, if it isn't

enforced it isn't much good. You would be amazed to see the kind of wiring that exists in factories in general.

MR. GERON: Is there any one else?

MR. J. E. COREN: The eye is considered the most delicate member of the human body. I haven't heard the subject discussed during the session, but in passing through different factories I find many men using wood alcohol for different purposes. The fumes from wood alcohol would destroy and ruin the sight of the human eye without some safeguard, something installed or some way of preventing that danger. Many people in the past have lost their sight.

Now the reason I rise to my feet at this time is for this reason, that I believe it to be a good time for the Industrial Commission to install that in their minutes, or have a paper read upon that subject. It would prevent this injury to the human eye if the operators in different factories, who have occasion to use wood alcohol, could have this brought to their attention. I mention it here because I am a safety engineer and always looking out for places where injury may occur.

MR. GERON: These are the kind of suggestions that are helpful. We realize wood alcohol and other substances, are injurious to the human eye.

MR. J. H. VOGT, Chemical Engineer, Division of Industrial Hygiene: In answer to the gentleman who just spoke, I suggest that he receive Bulletin 86, relating to wood alcohol and the inhalation of fumes. Our laws quite cover that. We also recommend in our code, which is not yet complete, that one part of wood alcohol to ten thousand volumes of air must be provided for the removal of such fumes when they are in such quantities.

MR. RAY S. BONSB, Tanners' Council, New York City: There is a lot of attention paid to illumination in plants, but very little paid to illumination in offices. You will visit a lot of offices and find very little attention is paid to the lighting. They are well lighted, but not well illuminated.

I have a case in mind where by the proper placing of a desk we were able to increase the efficiency of the office force thirty-two per cent. I believe attention should be paid to office people as well as the factory people.

MR. GERON: We could tell you a whole lot about offices not connected with factories, not only as to lighting but sanitation.

MR. R. S. DOULL, Consolidated Gas Company, New York City: There seems to be a good deal more open round table discussion on this bill than anything else previously taking place during the whole Convention. It shows the necessity of proper lighting, so it is a pity that this paper wasn't read earlier.

Now, this is a new proposition, they have given very careful attention to it the last two or three years, until they promulgated the first rule, which later became a law. They are seeking more light upon this subject but the provision only extends as far as safety to the workman is concerned. Should they go into efficient operation of work, as to what is proper illumination in factories? How much does this particular operation, or that particular machine need? That is too difficult; that is too far reaching; that is too technical a subject to cover by any law. You can't do it, the authority of the

Commission only extends to lighting necessary to protect the workman against injury.

I take it that is the proper function, and that is what the Commission has so far done.

Now, I will take a slight exception to one remark made by Mr. Ward in his paper. He errs on the right side, because modesty is the controlling factor of great people, and I think it is with extreme modesty that Mr. Ward gave the entire credit of the lighting code to the Illuminating Engineering Society. Doubtless the Society will be very glad to hear it. He has forgotten the work done by the Commission, he has forgotten the untiring work of others — I do not refer to myself, because I did so little. The Illuminating Engineering Society have done the major work it is true, they asked to have a man detailed for work and a very able man was sent. Although I was not connected directly with the Commission, I was invited to participate in the discussion, sometimes I could go and sometimes I could not, but I know the months and months of work we put on that. It is the Commission's code and any criticism should go to the Commission, and any credit as well.

MR. GERON: I would say for the last speaker that modesty is the prevailing attribute of the inspection force. I might say though, following this line, that we have made thousands of tests, and I think those tests will prove of great value to industries generally throughout the country. There is no other State that has made tests of lighting, in its relation to factories and the mercantile establishments, as we have. Of course, this is the lighting question and we are seeking light on it.

MR. DOULL: May I make this one suggestion, that the advisability of taking up these technical subjects and the reading of papers on technical subjects should be advanced a little earlier during the congress. We have had so much about the foreman, about the engineers, and here at the very last hour comes up really one of the most important subjects you could possibly present. I make the suggestion at the next congress that these technical subjects be taken up and papers read on them a little earlier so we can have the full attendance.

COMMISSIONER JAMES M. LYNCH: That question relates to the length of time the congress should or may consume. We provide for three days and a half for the congress. Yesterday there was a very large attendance and I called particular attention to the program for to-day. There was a very large number of safety engineers present, and I presume employers present. This paper was on the program for to-day and I urged every one who was here yesterday to be here to-day. I know that it may require some sacrifice; it is rather strenuous to sit here all day, but it is the only opportunity to present these matters and unless those interested, the employer and employee in industries, the superintendents, managers, owners, foremen, or wage earners, unless they will come here and stay here to listen to these papers, not one day, but three days and a half, we can't get the information across to them.

What difference does it make whether this paper on lighting was on the program Monday afternoon or Tuesday morning, if, by reason of that some other paper already read would be on the program this afternoon and be as important a paper? I have been trying to analyze the psychology of attend-

ance at a Safety Congress meeting. I see a man come in in the middle of an important meeting and just at the crucial point he interrupts the audience by getting up and going out. He is a human accident, that is the only way I can explain it.

I appreciate the suggestion, Mr. Doull, but I can't see how we can arrange it. The program is sent you, and when you get it you see the topics as they are arranged, and if they won't remain, why those who do remain are of the elect and properly enlightened by papers on lighting.

MR. GERON: May I add a word to what Commissioner Lynch has said. I might say this, possibly the safety men, the foremen, and the engineers, act in connection with the attendance here a good deal like they do in the factories, they don't pay any attention to the message the inspector carries into the plant. It takes up their time to go through and see what the inspector can show, and this force carries a message into plants that would save millions of dollars in this State alone. I would like to have for my share of this world's goods what could be saved in this State, and I will divide up with the manufacturers and take ten per cent and I'll guarantee I'd be the best paid man in the United States.

COMMISSIONER LYNCH: May I add that the next paper, by Mr. Train, "Pictures, the Universal Language" is very important? I know he is going to present his paper and subject in a way to make an impression. He kindly consented to assist us on Inspector's Day with this method of preventing accidents, but our safety engineers are gone and our foremen are gone. If we had the attendance of these men for this one paper alone it might save, in the way of compensation money, more than the salary of the particular foreman or safety man for the entire year. I think we will have to make a condition on the attendance of these meetings, it must be understood that the men sent must attend all the sessions of the Safety Congress.

Anybody else?

MR. J. ROY WILLIS, Factory Inspector, Utica: I have a factory in my district where the safety engineer told me that he expected to attend at least one session, and had been told to reserve a room at one of the hotels, but he didn't have to eat there if he could get something cheaper elsewhere. That is the attitude in a great many cases.

MR. GERON: This seems to be the best part of the program, as far as discussion is concerned, and I hope Mr. Train will be indulgent.

MR. DOULL: I don't want Mr. Lynch to think for one moment I criticized the program.

COMMISSIONER LYNCH: Not in the least, Mr. Doull, it has given me an opportunity to say what I have wanted to say at a number of the Safety Congresses.

MR. DOULL: There has been in previous days a slight repetition of the same subject, repeated by different papers, all approving what had been said. We all agree the foreman should be educated, now wherein should he be

educated? Don't tell these things in a general way but in a specific way, and naturally the interest is aroused and they are going to stay.

COMMISSIONER LYNCH: Mr. Doull, I am going to ask you—I am going to ask the stenographer to put your name on the Program Committee, for next year, of the Safety Congress.

MR. GEENON: We are learning each year, and as I sat here the thought came to me that the program wasn't just properly balanced. These papers have been read to the foremen. The foremen would have gone away with more thoughts on the subjects if they had not been read only but discussed as well. I don't say that in any criticism of the speakers who participated, but the inspection force is carrying this message into plants day after day and many fail to see the importance of it.

If there is no further discussion the next subject is, "Pictures, the Universal Language" by Mr. John L. Train.

MOTION PICTURES—THE UNIVERSAL LANGUAGE

BY JOHN L. TRAIN, General Manager, Utica Mutual Insurance Company.

MR. CHAIRMAN AND GENTLEMEN: The title of the paper which I have been requested to present to-day is an entire essay in itself. Motion pictures speak a language which every person can understand. Vision is one-eighth of a second and sound is 1100 feet a second so that it can be readily seen that the eye will grasp a picture before the ear can possibly transmit to the brain the impression created by the spoken word. What the eye can see the brain will more readily retain. The spoken word is too often quickly forgotten.

The motion picture to-day is a standard method of education. By this means the inhabitant of any small community may travel throughout the world. The average citizen to-day understands the customs and methods of living of practically every race of people throughout the globe. After having seen motion pictures of scenes in Japan, India, China, South America, Africa and other far distant countries, the books or stories describing the people of those countries are more easily understood and appreciated.

The mass of the people have been educated almost without their knowledge and the uneducated man of the back-woods section is as familiar with conditions throughout the world as was the educated man of twenty years ago. The same motion pictures are shown throughout the world to every class of people, whether rich or poor, educated or uneducated and are as clearly understood by those speaking one language as by those speaking ten. Motion pictures are shown in the colleges, schools, churches and the home and each day in the United States, it is estimated that 7,000,000 people are in attendance at motion picture exhibitions.

One great field that has only been touched in spots by the motion picture is the teaching of the prevention of accidents. Many of those who are students of the practical methods of educating the employees in the safety idea are convinced that the motion picture is superior to any other method in creating a lasting impression on the mind as to the dangers of industrial accidents. From my own experience I am satisfied that of all plans used up to this time in teaching safety, the motion picture is by far superior. This does not mean that the other plans or methods of teaching the principles of accident preven-

tion should be dropped or lessened in any way, but that they should be and ought to be supplemented by the motion picture.

Again and again it has been stated, and it is a fact proved by statistics and experience, that at least 70 per cent of all accidents are not due to machinery itself. This 70 per cent can be classed as morale accidents, the great proportion of which are caused by the carelessness of the workman, or his ignorance of the dangers to which he is exposed in his every day toil.

The problem of safety was at first limited almost entirely to the guarding of machinery and the elimination of the visible hazards. Wonderful success has been attained by that method in preventing accidents, and while it is impossible to state with any degree of accuracy the number or percentage of accidents that have been eliminated, I know that in our own company we find that the dangers due to machinery transmission such as belts, gears, etc., are decreasing rapidly. In fact, our records show that out of 10,000 accidents less than one half of one per cent were due to transmission. It is exceedingly important to remove these causes of accident, as such accidents are more serious than the average.

That great effort should be devoted to the education of the employees in accident prevention has been apparent for sometime past. Much has been accomplished by safety committees, bulletins, safety literature, general publicity through the press and by safety talks. By these means the employers, the foremen and the workmen have become interested in the safety campaign and through enthusiastic co-operation have assisted greatly in the reduction of accidents by bringing the dangers of industrial work to not only the employees but to their employers.

The motion picture as a method to be used in promoting safety should be the means of doing even more than any of the other single ideas. Many foreign workmen are employed throughout our industrial plants. It is very difficult to explain intelligently to these workmen speaking various languages of the dangers that lie in the operation of a machine, especially a machine that does not look dangerous. It is certainly difficult, if not impossible, to reach these workmen through safety talks which are usually given in English or through bulletins which are in most cases printed in English and which should in my opinion, always be printed in English, the American language. Further, it is especially difficult to point out to such a workman the danger of accident in the handling of material not only to himself but his fellow workmen.

If we throw on the screen the picture of a machine in actual operation with an unguarded belt and then show how the clothing, or an arm or a leg of an employee can be caught in that moving belt and then show the actual result of such an accident, the lesson that such unguarded machinery is dangerous is firmly implanted in that employee's mind. A moving picture shows the cause and effect of the accident in a life-like manner and tells the story in a language that can be understood by every employee.

Many employees do not yet appreciate the dangers of metal stamping machines. They grow careless and indifferent on account of the almost automatic operation of the machine. If the operator can have placed before him by a motion picture, the actual occurrence of an accident through the carelessness or inattention of a workman and then showing the effect of that accident by an injured finger or hand, that scene will create a lasting impression.

A word picture or description of a like accident in most cases would have but a momentary influence. Stereopticon views will show the picture of a machine but a machine not in action. But the workmen cannot long concentrate his attention on a picture without action, especially in this age of the motion picture.

It is difficult using an inactive illustration of a machine to point out with clearness just what the hazard is in the operation of that machine and the connection between carelessness or inattention and the accident caused thereby.

Every human being has his own life story. Some of the most astonishing books of fiction ever written are not nearly as wonderful as the stories of some of those whom we know personally. Every moving picture used for the purpose of teaching safety should have a human interest story. It is easier to fix in the mind historical incidents when they are connected with a story of real live human beings than it is to remember the dry facts and dates. Much of the history and many of the dramatic incidents of the Great War have been presented to all the world by vivid realistic pictures. The future student of history will have his text book thrown on a screen. It is therefore important that a story of actual life be included in the film with plenty of action so that the mind of the employer or employee will be kept concentrated on the subject that is being taught.

Many of the large corporations, the leaders in the safety movement, have used and are using at the present time the moving picture as their means of safety education. Mr. Marcus Dow, in charge of the safety work on the New York Central Railroad, has personally written three scenarios, pictures made from which have been shown to hundreds of thousands of people throughout the United States. Each picture has a story and dramatic action. These pictures have been sent over the railroad lines in an especially equipped car in order to reach all of the employees. From 50 to 75 employees are taken into the car, given a short talk on safety and then are shown the moving picture reels. Mr. Dow has stated this method of teaching safety is one of the best things the railroad has done. Mr. Dow a short time ago stated that a conductor, speaking to him after one of the showings of the moving pictures, said:

Nothing that was said in there about accidents was new to me and I saw nothing in the pictures that I had not seen done in life a hundred times. In fact, I have done most of them myself but I never thought about them so earnestly as this exhibition has made me think. I want to tell you that if this outfit don't set the men with families to thinking, if you don't educate them with this, you might just as well give up trying.

The United States Steel Corporation and the Ford Motor Company are other large employers which have produced and shown motion pictures. C. L. Close, Manager of the Bureau of Safety of the United States Steel Corporation, writes:

There is little doubt but that it (the motion picture) is one of the most important methods of reaching the employee.

Robert A. Shaw of the Department of Safety and Factory Hygiene of the Ford Motor Company is especially enthusiastic, stating:

We have every reason to believe that the showing of the safety pictures to approximately 80 per cent of our employees was largely responsible for a 27 per cent reduction in accidents during the period that the pictures were being shown, as compared with the same period one year previous.

Personally I have always liked motion pictures. In the beginning it seemed to many that the pictures were merely a form of cheap entertainment for the mass of the people. It was some time before the more educated of our citizens realized that the scope of the motion picture had broadened, furnishing not only real entertainment but an education. To-day in the motion picture theaters, you will find a class of people that well compares with those attending the regular theaters.

The compensation insurance company with which I am connected first attempted a safety moving picture exhibition for employees in Watertown, N. Y. I was not present at that exhibition but our Safety Department stated to me afterward that the theater was crowded with almost as many women as men. He stated further, that it seemed to be a great success, the people remained until all of the pictures had been shown and seemed to be greatly impressed with the manner in which the dangers of industrial accidents had been so vividly brought to their attention. Personally I was somewhat skeptical as to these reports. We therefore decided to present a larger moving picture exhibition in the city of Utica, N. Y., which contains a large foreign population. We rented a theater with the largest seating capacity, secured eight reels covering three subjects of moving pictures through the courtesy of the National Safety Council, secured a speaker from the American Museum of Safety and hired an orchestra. We advertised in the newspapers that this entertainment, which was given on a Sunday, was free to all employees and their wives or their husbands, distributed individual invitation cards to the employees in the various industrial plants. A half hour before the theater doors opened the lobby of the theater was crowded and before the entertainment started every seat in the theater was taken. What appealed to me particularly was the fact that the men had brought their wives, and that there was a very large percentage of our foreign population who understood very little English. The entertainment lasted slightly less than two hours and I am certain that no one present left the theater before the last moving picture reel was finished.

That a strong impression was created on the minds of the audience was evident from the exclamations made from time to time as the dangers of a whirling piece of machinery were so clearly shown by the actual accident, assisted of course, by the tricks so well developed by the motion picture directors. The wife was enabled to see before her in some cases the machine upon which her husband worked and she realized the dangers which were part of his daily life. She could also picture to herself what would happen to her or her children if it was her own husband that was injured rather than the almost equally vivid human being pictured on the screen. The wife undoubtedly would have a message for her husband in the morning before he went to work, warning him to be careful, to observe the rules of the shop, to pay close attention to his work and to avoid the dangers of which she had never realized before.

Not only therefore does this method of teaching safety reach the workman but it also reaches those who are interested in his welfare. Further, these pictures can be shown in the shops and plants at any hour of the day most convenient to the employer and employee, either at noon or before going home at night. Under such circumstances the employees lose practically no time from either work or recreation. The size of the picture can be adjusted to fit any room.

Practically all of the pictures which have been taken up to this time and which are available for distribution, have been at the expense of the larger corporations. In fact, practically all of the industrial safety films shown to date were taken either by the New York Central Railroad, the United States Steel Corporation or the Ford Motor Company. Through the courtesy of these corporations the educational safety work by means of motion pictures, has been possible. However, compared with the total number of the various classes and kinds of industries, the hazards of but few have been shown on the screen. The dangers of railroading, heavy steel work and to some extent the lighter steel work have been covered to some extent. Practically no films, if any, are available to show the particular dangers incident to such industries as stone cutting, and glass products, wood manufacturing, leather and rubber goods, chemicals, oils and paints, paper, printing and paper goods, textiles, clothing, millinery, laundering, food, liquors and tobacco, water, light and power, etc. Each employee is of course interested primarily in the kind of work and industry in which he himself is engaged. In order therefore to obtain the interest of the employee and to conduct an effective campaign, pictures should be available covering all of the larger classes of industry. One problem, therefore, is to obtain pictures showing the hazards in practically all lines of industry which can be shown to the employees engaged in that industry.

Further, arrangements must be made so that these pictures can be shown in all plants, whether large or small. The large manufacturer in any industry can probably afford the expense of providing a picture but cannot be expected to incur the expense or to make the arrangements for showing the picture in all of the plants engaged in a like industry. It therefore seems apparent that some central organization should make the necessary arrangements for the taking of the pictures and the showing of the films throughout the state so as to have a real centralized, uniform and effective program.

I believe that a wonderful opportunity is presented to the State of New York, through the State Industrial Commission, to enter the field of teaching safety to industrial employees by means of the motion picture. A few subjects could be covered each year and in four or five years the Commission would have a library of films which would cover practically every industry in the State. These films could be shown either under the auspices of the State Industrial Commission, in halls rented for that purpose in the various communities, or in the plants and shops. In case the employer owned a projecting machine the picture could be loaned to the individual employer.

Further, it is very probable that if other States, and some have already done so, undertake a similar program that the library of available films within a short time would cover almost every conceivable subject and every industry. These films could be exchanged through the State Industrial Commissions or Labor Departments of the various states.

It is estimated that the taking of a film costs approximately \$1.00 a foot so that a 2,000 foot film which takes about 30 minutes to show on the screen, would cost about \$2,000. The negative made from this film costs approximately 10 cents per foot, making a number of films available without much increased expense. The projecting machine with the proper lenses for the varying distances, screen, etc., cost less than \$500 for each equipment. Stand-

ard safety non-inflammable films should be used. There should of course, be added the salaries of the men engaged in showing the pictures, traveling expenses, rental of public halls, etc. Without doubt at the comparatively small expense of \$40,000 a year, an effective campaign can be undertaken in the State of New York with pictures that are particularly applicable to manufacturing conditions in this state. In my opinion this expense is trifling as compared with the amount of good that will be accomplished by a method already tested and proved, in educating the employer, the employees and the public in reducing industrial accidents.

The National Fire Prevention Association of the United States is about to undertake a campaign for the purpose of educating the public as to the enormous preventable fire waste which in 1918 in the United States and Canada amounted to approximately \$300,000,000. The destruction of property values cannot in any way be compared with the destruction of human life and the impairment of the human body caused by accidents. In the United States the deaths due to industrial accidents are in the neighborhood of 35,000 a year and the number of serious accidents about 2,000,000. The economic loss alone to the country itself due to these accidents would amount into the billions of dollars. But more important than that is the untold suffering to the workmen and their dependents. If only a fractional part of these accidents can be prevented by means of motion pictures, it is worth almost any money expenditure.

It is difficult, if not practically impossible, to trace the direct effect of motion pictures upon accident prevention. The cumulative effect of safety education has already been proved by actual statistics and figures. The records of one large manufacturing plant in this state show that for a period of five months after safety motion pictures were shown in their plant, the accidents were reduced 59 per cent as compared with the previous five months, and the manufacturer believes that the result was achieved mainly by the increased knowledge on the part of the employee of the dangers due to the manufacture of his product. It is not claimed that the motion picture will attain that result in all plants but we do claim that it teaches every employee that the danger of accident is ever present, arouses his interest and calls his attention in the most vivid fashion to the results of carelessness, inattention and the violation of instructions and shop rules.

The representatives of every large corporation that has undertaken a safety campaign by motion pictures are unanimously of the opinion that this form of education is the most effective. I am satisfied from my own personal experience in showing these pictures in various sections of the State that it is the best means yet devised of securing the active interest of the employee and practically the only method yet discovered of reaching those dependent on the employee. In a great state like New York the cost of producing and showing motion pictures is comparatively small, and when divided by the number of workmen in industry it is negligible.

I am pleased to state that the chairman of this meeting, Mr. James L. Gernon, after an investigation for the State Industrial Commission, has made a report endorsing motion pictures as a means of safety education, stating in conclusion:

It is time that industrial managers in this and other States came to a full realization that the responsibility for instructing working men and women in the proper method of performing their work is of the utmost importance.

From our experience we cannot come to any other conclusion but that such a plan of education is absolutely necessary for many inexperienced people who are put at hazardous occupations or processes without proper instruction, and with no knowledge of preventing an injury that might befall them.

I would therefore advise that you give this matter your careful consideration, and trust that it may be possible to secure an amount of money ample to carry on this campaign of education.

The public generally and the industrial employers and employees particularly, should heartily support such a request for an appropriation from the legislature for the purpose of producing the motion pictures and conducting a state-wide campaign of safety education. The great State of New York can well afford this expense for the purpose of conserving the well being and the lives of its workmen and women.

MOTION PICTURE

At the conclusion of the above address, Mr. Train exhibited a motion picture entitled "The Americanization of Tony," illustrating safe and unsafe practices for maintenance of way employees on railroad work.

MR. GERNON: Now that is the conclusion of the program. Commissioner Lynch will close the congress, and if the quartette is here we will have a song.

COMMISSIONER JAMES M. LYNCH: Just be patient for five minutes longer and we will close.

On behalf of the Industrial Commission I desire to have it appear on the record, that an expression of the appreciation of the Commission of the work of the program committee in preparing the program for this Fourth Industrial Safety Congress; the thanks of the Commission is expressed to the people who so kindly consented to prepare and read the papers here; the appreciation of the Commission of the space accorded to the congress in the newspapers of the city, and also the gratitude of the Commission for the treatment that has been accorded to its representatives and the attendance at this Fourth Industrial Safety Congress.

I think that we will all agree that this has been by far the best congress that has been held. I think that we realize that this idea of the annual safety congress has taken a firm grip on the imagination of the people of the State who are concerned in industrial safety. Many suggestions have been made during this congress, as to the program for the next safety congress, that it should be broadened to cover other fields of human endeavor. As to whether the Commission will consent to go outside of its jurisdiction, I can not answer at this time.

I feel personally grateful for the magnificent Fourth Industrial Safety Congress. Four years ago I suggested that these industrial safety congresses should be inaugurated, a motion was unanimously approved, and you will remember that the first one was not very well attended. They kept on improving each year until this year we have had the record attendance, especially on Tuesday and Wednesday.

We appreciate your attendance and the attention you have given and trust you will be with us again next year, in whatever city the Industrial Commission may decide to hold the Fifth Industrial Safety Congress.

And now, with the selection from the quartette, we will declare the Fourth Industrial Safety Congress adjourned.

SAFETY EXHIBIT

The exhibit of safety devices, which is a feature always of interest at these annual gatherings, was more comprehensive than in any previous year.

Among the exhibitors were the following firms and organizations. The business address of each exhibitor and nature of each exhibit is indicated.

Aetna Life Insurance Co., Hartford, Conn.—Model factory.

Allis-Chalmers, 50 Church St., New York City—Dust collector.

Ambrine Laboratories, 347 Madison Ave., New York City—Medical supplies.

American Abrasive Metals Co., 50 Church St., New York City—Safety treads.

American La France Fire Engine Co., Elmira, N. Y.—Fire fighting appliance.

American Mason Safety Tread Co., 813 Old South Bldg., Boston, Mass.—Safety treads.

American Mutual Liability Ins. Co. of Boston, 18 E. 41st St., New York City—Insurance data.

F. A. Carlton, Syracuse, N. Y.—Belt shifters.

Celite Products Company, 11 Broadway, New York City—Fire proof material.

Chemical Toilet Mfg. Co., 2626 So. Salina St., Syracuse, N. Y.—Chemical toilet.

Chesebro-Whitman Co., 1167 First Ave., New York City—Ladders and scaffolds.

Cleveland-Breathing Machine Co., 1854 Euclid Ave., Cleveland, Ohio—Breathing machines.

Community Motion Picture Bureau, 46 W. 24th St., New York City—Motion picture service.

John Douglas Co., 1517 So. Salina St., Syracuse, N. Y.—Sanitary appliances.

Foamite Firefoam Co., 200 Fifth Ave., New York City—Liquid fire extinguisher.

General Electric Co., Schenectady, N. Y.—Electric safety devices.

Graphoscope Co., 50 E. 42d St., New York City—Moving picture films and projectors.

F. A. Hardy & Co., 15 W. 36th St., New York City—Goggles.

W. P. Hitchcock Co., 319 So. Salina St., Syracuse, N. Y.—First aid goggles.

Hot-Flo Faucet Corporation, 1400 Broadway, New York City—Hot-Flo electric faucet.

Hagman Machine Works, Syracuse, N. Y.—Safety clutch.

Irving Iron Works, 3d, 4th, Creek Sts. and Dutchkills Creek, Long Island City, N. Y.—Floor gratings.

H. W. Johns-Manville Co., Madison Ave. and 41st St., New York City—Fire-proof material and extinguishers.

Kaustine Co., Inc., Buffalo, N. Y.—Waterless toilets.

Julius King Optical Co., 12 Maiden Lane, New York City—Goggles and masks.

E. G. Kleckler, Bath, N. Y.—Automatic cone belt shifter.

H. D. Lee Mercantile Co., Trenton, N. J.—Overalls (M. and F.)

Liberty Safety Guard Co., 436 W. Broadway, New York City—Machine guards.

J. Livingston & Co., 405 So. Clinton St., Syracuse, N. Y.—Industrial lighting.

- Lungmotor Co., 711 Boylston St., Boston, Mass.—Lung motor.
- McNutt Can Sales Co., 83 Chambers St., New York City—Safety cans.
- Mine Safety Appliances Co., 908-12 Chamber of Commerce Bldg., Pittsburgh, Pa.—Safety appliances.
- Metropolitan Life Ins. Co., 1 Madison Ave., New York City—Insurance data.
- Miller Bros., 29-33 W. 30th St., New York City—Safety guard.
- Nicholas Power Company, 90 Gold St., New York City—Motion picture projector.
- Norwich Wire Works, Norwich, N. Y.—Machine guard.
- Oxweld Acetylene Co., Newark, N. J.—Welding and cutting.
- Protecto Safety Appliance Co., 50 Columbia St., Newark, N. J.—Masks for ammonia, and other fumes.
- Prudential Insurance Co., Newark, N. J.—Insurance data.
- Pyrene Mfg. Company, Syracuse, N. Y.—Fire extinguisher.
- John A. Roebling's Son Co., 117-21 Liberty St., New York City—Wire rope slings.
- Safety First Supply Co., Hartje Office Bldg., Pittsburgh, Pa.—General safety devices.
- Sectional Safety Stop Co., Inc., Binghamton, N. Y.—Machine guards.
- Shur-Loc Elevator Safety Co., 62 W. 45th St., New York City—Elevator safety appliance.
- Walter Soderling, 347 W. Broadway, New York City—Respirators.
- Solvay Process Company, Syracuse, N. Y.—Safety devices.
- Square D Company, Detroit, Mich.—Electric switches.
- Strong, Kennard & Nutt Co., 2044 E. 9th St., Cleveland, Ohio—General safety devices.
- Stromberg-Carlson Telephone Mfg. Co., Rochester, N. Y.—Telephone apparatus.
- Strauss & Buegeleisen, 438 Broadway, New York City—Goggles, masks, etc.
- W. H. Sylvester & Son, northwest cor. 17th and Vine Sts., Philadelphia, Pa.—Printing press guard.
- Trumbull Electric Mfg. Co., 114 Liberty St., New York City—Safety switches.
- Utica Mutual Compensation Ins. Co., Utica, N. Y.—Data sheets.
- T. A. Willson & Co., Reading, Pa.—Goggles.

A large number of charts and tables, summarizing the activities of the New York State Industrial Commission, were also on exhibition.

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